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THE FINANCIAL AND PROGRAMMATIC MANAGEMENT OF THE NUCLEAR REGULATORY COMMISSION

HEARING

BEFORE THE

SUBCOMMITTEE ON
NUCLEAR REGULATION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED SECOND CONGRESS

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FINANCIAL AND PROGRAMMATIC MANAGEMENT OF THE NUCLEAR REGULATORY COMMISSION

TUESDAY, MARCH 19, 1991

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m. in room 406, Dirksen Senate Office Building, Hon. Bob Graham [chairman of the subcommittee] presiding.

Present: Senators Graham and Simpson.

OPENING STATEMENT OF HON. BOB GRAHAM, U.S. SENATOR FROM THE STATE OF FLORIDA

Senator GRAHAM. The subcommittee will come to order.

Today the Subcommittee on Nuclear Regulation is conducting a hearing on the financial and programmatic management of the Nuclear Regulatory Commission. We will hear testimony from Mr. David C. Williams, the Inspector General for the NRC, and from Mr. James M. Taylor, Executive Director for Operations of the NRC.

The subcommittee has asked these witnesses to testify about the major findings and recommendations of the audits and investigations conducted by the Inspector General during the past year, and the extent to which the Nuclear Regulatory Commission has implemented these recommendations.

In reviewing the testimony, I am encouraged to learn that the NRC has implemented 40 of the 44 recommendations of the Inspector General during the past year.

We have also asked the witnesses to provide information about the NRC's most recent report under the Federal Manager's Financial Integrity Act, FMFIA. FMFIA requires each Federal agency to report annually to the Congress on the agency's evaluation of internal financial controls and to identify any areas of weakness.

Finally, we have asked the witnesses to comment on the working relationship between the Inspector General and the NRC. I am aware that in the past there were serious conflicts between the Inspector General's predecessor office and the NRC. Congress created the Office of Inspector General as an independent office in part to eliminate some of the structural reasons for this conflict. I am interested in the views of our witnesses on the extent to which this

effort has been successful and on the extent to which this has led to more effective and efficient regulatory processes.

In addition to chairing this subcommittee, I have chaired the Moderate Rehabilitation Investigations Subcommittee of the Committee on Banking, Housing, and Urban Affairs. That subcommittee was created to investigate the mismanagement of programs at the Department of Housing and Urban Development. As a result of its investigation, the subcommittee recommended that the congressional committees with authorizing responsibility for Executive Branch agencies regularly engage in oversight of the programs and management of those agencies in order to help prevent mismanagement of the type found at HUD.

This hearing today and the one we will be conducting next month on the Department of Energy's High Energy Waste Program indicate my commitment to implementing these recommendations. The HUD Mod Rehab Investigations Subcommittee also found that the Inspector General at HUD did not warn Congress in a clear manner as to the growing management problems at HUD. We concluded that the Inspector General was not aggressive in notifying Congress of flagrant abuses.

Mr. Williams, I encourage you to bring to this subcommittee any serious concerns that you have regarding the programs that you review. We are anxious to know of any problems in management early on.

I also urge you to read our Mod Rehab investigative report to learn some of the lessons from the HUD scandal.

Last year's budget agreement requires the NRC to recover 100 percent of its budget from its licensees. This means that in all likelihood the consumer, either in electricity or in medical or industrial services that use radioactive materials, will be forced to pay more for these services. Because we should be equally vigilant about Federal expenditures regardless of whether the money comes from the taxpayers or the consumers, I hope the NRC recognizes that even though the NRC budget will no longer affect the level of the Federal deficit, the NRC will still be subject to high-level scrutiny regarding its expenditures.

The NRC has a responsibility to protect the public health and safety. Although the NRC is not a large agency in comparison to other Federal agencies, its mission is very important. Our responsibility is to make certain that resources are wisely spent.

The Inspector General performs a valuable function in protecting the public and in assisting the NRC to carry out its primary mission of protecting the public health and safety effectively. I look forward to hearing the testimony of both of our witnesses today.

We are joined by our senior member and the ranking minority member of our committee, the distinguished Senator from Wyoming, Senator Alan Simpson.

Senator Simpson.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Thank you very much, Senator Graham. I want to congratulate you on the intrepid and consistent way that

you handle this subcommittee. It is a difficult task. I used to do it, and I admire the way you do it. It's a pleasure to serve as the ranking member of the subcommittee.

I want to thank you for the effort in setting this up. You have outlined what we are up to. We've had a lot of oversight over the years. I can remember some very serious oversight hearings. It's very important we do that. You mentioned the problems at HUD; if there had been closer oversight, those problems might have been avoided. Some of our oversight hearings that I recall, have been very difficult and trying as we attempted to look at the problems facing the agency, the industry itself, and the citizens, and we have plenty of tough bridges yet to cross.

This Congress will prove to be an important one as we face the task of developing a national energy policy and enact a package into law to address those needs. Nuclear energy is a very important part of that, and that discussion is going on; nuclear energy and its part in the National energy strategy. So our efforts today signal the work which we have to do.

I have read the material from the staff. I appreciate that. I have a fine new staff member, myself, Karen, who is doing a marvelous job, and your people are very cooperative. This is very helpful as we do the subcommittee work.

I think it is very important to me to see that we have—and I'm pleased to see it—that we have an aggressive office here, dedicated to fair investigations which protect the rights of the individual and provide the invaluable function of identifying the program weaknesses and providing recommendations for improvement. In the past I have seen some chaotic turf-scrapping within the NRC, which is ponderous to observe, and I hope that that's being thinned out.

I see an effective working relationship between the Office of the Executive Director for Operations and the Inspector General. That has to be. That's essential to effectively implementing a program and the changes which improve agency operations and achieve this "safety first" ethic, which is our sole function.

I will be looking at that. And, of course, good intentions alone are worthless unless something comes of them. That has often been the case with the NRC in the past. Things have been identified, and then it just slowly sinks to the bottom and nothing is ever done. So I encourage the process of continual growth and improvement, and I thank you for coming here today.

Mr. Chairman, I am going to be deeply involved in a hearing down in the Judiciary Committee which has to do with a man from Florida, a judge from the Southern District, which will be a spirited hearing—Judge Ryskamp. That takes place this morning in Judiciary, and of necessity I will have to go there, but I will have questions to present.

I thank you very much.

Senator GRAHAM. Thank you very much, Senator Simpson.

Our first witness today is David C. Williams, Inspector General for the United States Nuclear Regulatory Commission.

Mr. Williams, we appreciate your being with us today. As you can see, we're trying to meet in a relatively informal session so as to promote as much discussion among all of us as possible. I hope

that after Mr. Taylor has made his statement that we can engage in a four-way examination of the state of this agency.

Mr. Williams.

STATEMENT OF HON. DAVID C. WILLIAMS, INSPECTOR GENERAL, NUCLEAR REGULATORY COMMISSION

Mr. WILLIAMS. Thank you, sir.

Mr. Chairman and Senator Simpson, I am pleased to appear before you today to discuss the recent work and the general level of effectiveness of my office at the Nuclear Regulatory Commission. Specifically, you expressed an interest in the office's investigative work and the major findings and recommendations of recent audits, including our examination of the agency's Federal Manager's Financial Integrity Act.

As you know, the Inspector General Act Amendments of 1988 created a statutory Inspector General at the NRC, effective April 15, 1989. Following my Senate confirmation, I assumed the duties of the Inspector General in December, 1989. During my first year with the NRC I found it necessary to restructure the investigative section. A number of investigators with extensive criminal investigative experience were recruited from a variety of backgrounds. A principal task for this new group was to reduce a tremendous backlog of very old investigations that this new office had inherited. The backlog was a serious concern to the Commission, as well as to your full committee, which asked that those investigations be completed as quickly as possible.

I am particularly pleased to report to you today that that was accomplished. There were 109 investigations closed between December, 1989 and the present. Among those investigations were two extensive examinations of the manner in which our predecessor office, the Office of Inspector and Auditor, had conducted investigations. Much was learned from these introspective examinations concerning the conduct of high-level internal investigations. Principles that will serve as guides for future work were developed and adopted to assure fairness, objectivity, and the rule of law within the Commission. These principles were integrated into our new investigative manual, which complies with the standards of the President's Council on Integrity and Efficiency, and current guidelines of the Department of Justice.

The restructuring of our investigative section included the formation of an inspection team. Inspections are expedient fact-finding inquiries that examine singular incidents of a problematic or troubling nature, and with consequences too urgent to await a broader review.

Our first inspection focused on NRC's evaluation of emergency preparedness planning around the Pilgrim Nuclear Power Station. The inspection found that the evaluation was not balanced or thorough, and that certain information provided by the staff to the Commission was inaccurate.

We also conducted other important investigative work, such as our examination of the undisclosed and inappropriate levels of assistance given to petitioners who wish to propose rule-making changes within the NRC. The agency was quick to examine and

create important changes to its policy for staff who provide assistance to rule-making petitioners.

This year also brought a significant increase in the number of allegations submitted to my office. We view this as a positive indication of the growing confidence that NRC employees and the public have toward the Office of Inspector General. The number of allegations received each month has steadily increased to where we now receive over three times the number of allegations reported to our predecessor office.

During the past year our audit program focused on two general areas: technical audits, and administrative and financial audits. Two examples of our technical audits are reviews we conducted of NRC's program for licensing reactor operators, and the method NRC employs to evaluate emergency preparedness at nuclear powerplants. Our administrative and financial audits focused on NRC's need for accurate and timely financial accounting systems. These audits included reviews of the agency's debt collection and prompt payment capability, its travel system, and its license fee and cash management capabilities.

Our future attention will be directed to the agency's financial statements, budget execution, and overall financial management system.

After we completed our review of the NRC's management of travel funds, follow-up work was performed which determined that of our 14 original recommendations, only 9 had been adopted by the staff. Subsequently, the Controller formed a task force to review the travel function.

Our most recent semiannual report cited over $250,000 as funds which NRC could put to better use as a result of our contract audit reviews. These savings resulted from pre-award audits, which are reviews of contractors' cost proposals. By using these audit findings the NRC was able to negotiate reduced contract costs.

In our December, 1990 report on the NRC's FMFIA assurance letter to Congress, we noted NRC's compliance with portions of the act but advised that Federal agencies are required to conduct periodic, detailed reviews of internal financial systems. Regarding those reviews performed by the NRC, we commented on the agency's need to conduct future reviews in conformance with OMB guidelines. We will continue to work with the NRC throughout the remainder of the year on this issue.

Although the assurance letter identified several problem areas, none of them were of the magnitude to be considered as material weaknesses. The problems concerned the travel accounting system, which we have already discussed, and the manner in which NRC conducted an emergency planning review at the Pilgrim Nuclear Power Station.

While conducting these and other investigative and audit reviews we identified a need for NRC to develop a systematic resolution and follow-up procedure for our recommendations. I believe the NRC has worked closely with us in discussing our recommendations and the manner in which they may be implemented. This year my office made 44 recommendations for change in such important areas as defective part reporting, emergency planning, financial management, contracting practices, and the manner in which

NRC relates to external parties. The agency agreed to implement 40 of the 44 recommendations. We believe that the remaining 4 concerns may be resolved by alternative changes that the agency has proposed for itself. These four issues will be examined in our audit follow-up work.

Our investigations and inspections also resulted in significant changes. These changes range from specific personnel actions to broad policy modifications. I believe the agency's record of response to this year of change has been good. The EDO and the Controller have personally involved themselves in bringing about this change. I commend them for their highly focused and rapid responses to our work.

During the conduct of our work there has also been cooperation by the Commission and agency officials in assuring complete and immediate access to their records and personnel.

Finally, the Commission was quick to address critical shortfalls in resources experienced by my office in the early months of operation.

In the coming year, the Commission has supported the need for the creation of a small financial management audit group within my office. This was necessitated by the recent passage of the Chief Financial Officers Act and by our own identification of a need to conduct expanded audits in the area of NRC contracting.

This concludes my report to you on the activities of the past year and the current status of our operation. With our backlog cleared, I am confident that the office is now in a position to assume an aggressive and highly relevant routine. The challenge of providing assurance to the NRC in these important and complex programs is great, and we look forward to assisting the agency in meeting that challenge.

Thank you for the opportunity to explain our program today. I would be pleased to answer any questions you may have when you are prepared to do so, sir.

Senator SIMPSON [assuming Chair]: Thank you, Mr. Williams.

Mr. Taylor.

STATEMENT OF JAMES M. TAYLOR, EXECUTIVE DIRECTOR FOR OPERATIONS, U.S. NUCLEAR REGULATORY COMMISSION, ACCOMPANIED BY RONALD SCROGGINS, CONTROLLER

Mr. TAYLOR. Mr. Chairman, Senator Simpson, I am pleased to appear before you today to discuss the financial and programmatic management of the NRC. Accompanying me is Mr. Ronald Scroggins, the NRC's Controller.

To establish a framework to discuss these areas I will first briefly describe the NRC mission and organization.

As the chief operating and administrative officer of the Commission, I direct the activities of the NRC's major program offices, as well as those of the major administrative offices of the agency, subject to the policy guidance provided by the Commission itself. Most of the Inspector General's audit activities involve agency programs within my area of responsibility. The Inspector General and I both report to NRC's chairman.

As you know, the NRC is responsible for ensuring that civilian uses of nuclear materials in the United States—in the operations of commercial nuclear powerplants, and in medical academic, and industrial applications—are carried out in a way that will adequately protect the public health and safety, the environment, and the National security. As the Senator said, safety first.

To accomplish its regulatory program, the Commission has approximately 3,300 employees who are assisted in selected areas by contractor technical support. Approximately 48 percent of the agency's fiscal year 1992 budget request of $512.5 million is needed to pay personnel salaries and benefits. About 32 percent is allocated to contractor support, primarily from the Department of Energy's national laboratories. The remaining 20 percent of NRC's budget request is for administrative support, including rent, telecommunications, supplies, and travel. We in the NRC are cognizant of our responsibility to manage these Federal resources effectively and efficiently to achieve our mission.

I will now briefly summarize how NRC manages its resources and programs.

In the area of resource and fiscal management, we have in place agencywide accounting, financial, and administrative systems which ensure resources are managed and controlled in accordance with applicable laws, regulations, and good financial management practices. We recognize that although NRC's financial management systems and procedures have been reasonably effective, improvements can be made. For example,. over the past year I have worked closely with the Controller to effect significant changes and improvements in the travel management area, where I became personally involved with some of the improvements.

I also hold my senior NRC managers responsible for effective management of their assigned resources. As required by the Federal Managers' Financial Integrity Act, these managers must certify that their internal control systems provide reasonable assurance that these resources are properly safeguarded against fraud, waste, loss, or unauthorized use.

The NRC has a number of agency committees and groups to support me and its managers in implementing effective and efficient resource management. For example, the NRC has an agencywide Internal Control Committee that develops and maintains a five-year management control plan for the agency to ensure that management control reviews of selected technical and research programs and administrative activities are scheduled and conducted each year.

We also have a Senior Contract Review Board, on which I previously served as the chairman, which evaluates all major projects proposed for the NRC for contract. This process ensures that there is no unwarranted duplication of work and that the project is important to support NRC's mission.

I now turn to program management, particularly as it relates to effective and efficient use of Government resources.

I believe one of my most important management responsibilities is to ensure our limited resources are directed to areas that have the highest safety payoff to the taxpayer. For example, I meet with senior NRC managers twice a year to identify which nuclear facili-

ties require special NRC attention. This is our so-called "problem plant" process for which these senior operational managers of the NRC get together every six months. We are increasingly using potential risk reduction as a criterion for undertaking new regulatory programs and regulations. We continually assess priorities of research projects, licensing work, and other staff efforts with a focus on safety payoff.

For example, to ensure that our research efforts are properly directed, we require that most projects be endorsed by the program office that is expected to use the research. Further, the research program is reviewed by a special committee of prestigious technical experts from academia and industry.

Several NRC review and advisory committees assist in focusing staff effort. The Advisory Committee on Reactor Safeguards performs independent reviews and reports on safety studies, applications for construction permits, and facility operating licenses. A similar independent committee, the Advisory Committee on Nuclear Waste, advises the Commission and the staff on all aspects of nuclear waste management within the purview of our responsibilities.

The Committee to Review Generic Requirements, which reports directly to me, provides substantive quality review and comment to the staff on significant regulatory proposals to implement generic requirements on licensees, and on proposed rules. This helps to ensure that there is a safety payoff and obtains the best use of agency and licensee resources.

In summary, I believe the Nuclear Regulatory Commission has appropriate programs in place to reasonably ensure overall effective and efficient management control of its resources and programs. Nevertheless, we are striving to improve our programs in some areas, and are receptive to improvements that can be made to correct any weaknesses.

In addition to the existing management controls, the NRC will be further strengthening its oversight of agency financial management activities as it implements the Chief Financial Officers Act of 1990. The NRC's CFO organization will have the responsibility and the necessary authority to enhance existing systems of accounting, financial management, and internal controls.

As you requested, my full statement addresses the NRC's most recent report to the President and Congress under the Federal Managers' Financial Integrity Act. In summary, the chairman reported that results of our continuing evaluation of internal control and financial management systems provide reasonable assurance that the NRC as a whole complies with that act. No material weaknesses or nonconformances were identified.

The Inspector General, as part of his annual assessment, concluded that the NRC's internal control system had complied in a reasonable and prudent manner with the requirements of the act, but made recommendations to improve the timeliness and content of our financial management review. The IG, as he noted, also commented on the need to automate our license fee billing system, and we are taking steps to implement these improvements identified by the IG.

The staff's management control activities are complimented by the Inspector General's independent audit program. We respect and appreciate the value of the independent role the IG plays in the oversight of our program.

I also believe we have an effective and efficient working relationship with the Inspector General. We have a process in place for the Inspector General's independent review and comment, as he deems appropriate, on proposed legislation, regulations, and policies relating to NRC's programs and operations. The Inspector General, at his discretion, briefs me on audit matters, and NRC management provides input to the IG audit findings by recommending areas where an independent IG audit may lead to improvement.

The NRC—and I, personally—take the IG findings and recommendations very seriously. Generally, we have agreed with the Inspector General's recommendation. As he noted, last year we agreed to implement 40 of 44 IG recommendations and partially agreed with two others. The remaining ones are being worked out and I believe will be resolved to the satisfaction of the IG.

As also requested in your invitation, my written statement addresses some of the major findings and recommendations of audits and investigations conducted by the IG during the past year. These major findings involved, as some were mentioned by him, the use of contract license examiners; NRC's management of reporting requirements under 10 CFR 21; follow-up actions taken on controls over the use of travel funds; he mentioned staff assistance in developing rule-making petitions; he mentioned emergency preparedness at the Pilgrim Nuclear Power Plant; and he also mentioned NRC's emergency planning regulations and implementing guidance. More details on our actions are in my prepared statement.

This concludes my oral statement, Mr. Chairman. I am prepared to answer any questions.

Senator GRAHAM [resuming Chair]: Thank you very much, Mr. Taylor.

As Senator Simpson indicated, he has another committee meeting concurrent with this.

Senator Simpson, if you have any questions we would be pleased to receive them now.

Senator SIMPSON. Mr. Chairman, you are very kind to do that. I just might ask a question of Mr. Taylor.

What is, briefly, the process by which the course of any corrective action is agreed upon and implemented when there is a disagreement, when the EDO disagrees with the IG's recommended action?

Mr. TAYLOR. Where there are points of disagreement I respond to him in writing. Frankly, we then have an opportunity to talk further about the matter. The four items that were in dispute, we implemented at least two of those in part, and I believe the other two we are resolving to the satisfaction of the IG. So we conduct our business formally. We also communicate with each other, particularly if it's a matter that would be more efficient for us to do somewhat differently than the way the IG has recommended. That process has been working, to my belief.

Senator SIMPSON. Let the record show that he is nodding his head.

[Laughter.]

Mr. TAYLOR. The IG, of course, can go to the chairman and the Commission on any matters, but so far—except for special reports—I don't believe he's found that necessary for the audit matters.

Senator SIMPSON. Just a final question, to Mr. Williams.

Is the IG office convinced that the NRC's General Counsel's determination regarding the Inspector General's recommendations concerning the review of the NRC emergency planning regulations and implementation—does that actually satisfy the recommendations of the IG?

Mr. WILLIAMS. Yes, sir. Our recommendation was that they reexamine their authority in light of these possible new initiatives that they might undertake. The agency first expressed a confidence that they understood the authority. We reasserted that that exercise should be undertaken. They agreed to undertake it, and the General Counsel has developed a legal opinion in which that recommendation was satisfied.

Senator SIMPSON. Do you believe that the recommendations to prevent similar occurrences at Pilgrim or any other plant, based upon a report of the lessons learned from the task force, would result in appropriate corrective action?

Mr. WILLIAMS. We felt that the plan that was undertaken, at the recommendation of the task force, was a good one. It aggressively called for the Commission to become involved when decisions like that were made in the future, for a plan of study to be reviewed by the Commission. They are developing a system which would more scientifically approach the task before them. They are going to create a good document trail as a result of the recommendations, and they are working with FEMA to try to come up with a common understanding of what would cause a judgment of adequacy to be withdrawn, which is something that had become slightly out of focus over the years. We were pleased with all of those. We will know more when they actually engage in the work and we do our audit follow-up work, but we approved of the plan and felt good about the aggressive attack on the failures that we had cited and that the task force had affirmed.

Senator SIMPSON. Well, I want to thank you both. You both have impressive credentials. You both sort of started out at the same moment in time. It seems to me, from what I'm reading and hearing, that things are working, and that's what congressional oversight is all about, not to just spend time shredding the agency or trying to make it talk, but getting through the frustration and impatience that we have in just watching, year after year after year, nothing ever really getting done. I have watched that; and yet, I think the NRC is fulfilling its mission, which is to assure public health and safety, but it gets involved in so many internal scraps and all this pettiness, and then layers of lawyers. And even that is somewhat smoothing out.

But I do think it's important, in seeing both of you and knowing what you are doing, that you are really involved in a thoughtful exercise of carrying out your mission and not seeing who can outdo the other or "outstaff" the other or all the rest of the stuff over there that I've watched for 12 years.

Thank you. I appreciate it.

Thank you, Mr. Chairman.

Senator GRAHAM. Thank you, Senator.

To follow up on the comments of Senator Simpson, one of the reasons that I was anxious to hold this hearing was, frankly, to establish a personal relationship with you two gentlemen. One of the human concerns that was observed in our investigation of the Department of Housing and Urban Development was that there was not that type of relationship. Thus, for instance, when the Inspector General saw conditions that warranted congressional attention, they were not brought as early or as forcefully as they might have been.

So I would hope that there would not be any need for that, but if so, that we will have a relationship that will bring those questions up at a time that they can be dealt with before they degenerate as they did at HUD.

One issue that I'm interested in is how the agency deals with anticipatory matters. What is your process of surfacing issues in a proactive basis and shaping them, rather than reacting? To use as an example—and I underscore "example" rather than for it to be the focus—you are now moving to a 100 percent licensee-supported finance base. I have observed in some other agencies which have had such a 100 percent licensee-support base a certain slackening of some of the attention to the use of resources. When you don't have to meet the annual test of appropriations, in competition with other users of those same funds, there can be a tendency to be less severe, less observant in the use of resources.

With that as an example, as something to be anticipated, could you describe your anticipatory processes and how they might apply to that specific example or others that you see on the horizon?

Mr. TAYLOR. Senator, perhaps I can take the first shot at that.

We take this responsibility of collecting 100 percent of the fees—I do, personally—very seriously. I have been to the Commission with proposals on how to do that. That's a very tough process because of the span of our licenses, across so many small operations, as well as up into the big power reactors. I provided my proposals to the Commission. The Commission has acted. I expect by the middle of April to be able to sign a proposed rule which will go for public comment. I anticipate a great deal of comment across the industry. We intend then to complete that rule by July as a final rule so that I can proceed with billings by about the 1st of August in order to fill my statutory responsibility for collections by the end of the fiscal year. So we have treated the whole process with a very high priority on the management side of the agency to put it into place. I have top managers working on it, and it is proceeding, because I am very conscious of the deadline.

It will be necessary to augment the fee staff. I am making arrangements to do that. We are putting all the resources necessary to do the job under the Controller. I expect we're going to have a few start-up problems, but I intend to stay very close to this, as the EDO, as it progresses. I will be looking for vulnerabilities. I suspect Mr. Williams will audit our operation soon thereafter, and I will be looking forward to any comments he has for improving it.

It is a difficult task, I'll be honest with you. We have a very wide constituency of people who use by-products, and trying to interject the appropriate fairness in the level of fees is a very difficult task.

Mr. WILLIAMS. I would add a couple of thoughts to Mr. Taylor's statement.

We have done some early work in the area of license fee collection from users. As Mr. Taylor alluded to, we suggested and recommended the automation of the process, which I think will be a vehicle for assuring the timeliness. We are currently completing a body of work and anticipating that the process is about to be needed and that increasingly sophisticated demands will be placed upon the process of fee collection and tracking. As that body of work completes itself, it will look specifically at the tests of timeliness and accuracy and fairness for the process.

In anticipating other kinds of problems and opportunities that we see for the agency, we have developed an "audit universe," which is an identification of every component inside NRC that we know ought to be audited and where assurance is needed for Congress and for the agency in conducting its operations. We are trying to aggressively attack that universe, and within the universe we have developed priority areas where we think that attention is especially needed, on the financial statement, as we've indicated in the statement, and on the operations side. We want to know more about the licensing process as it becomes increasingly important with initiatives that the agency hopes to undertake; nuclear waste—we want to make sure that as the Department of Energy becomes an additional licensee for that process, that that takes place in the proper way, assuring both expediency and careful examination of their license application.

We want to look currently at the process of inspection, of a core inspection and a master inspection program, to make sure that it is comprehensive, that it is aggressive, that it is intelligently undertaken. We're going to look at the safeguards program, trying to assure ourselves of the same kinds of things.

In the past it has also been of concern to the committee and the subcommittee, and also to the agency, that it relate to external parties in a manner which is fair and balanced and objective. We've undertaken some work this year. We hope to look at that in an aggressive way in the future, as well.

We appreciate the opportunity to work with your staff and we hope that that will be an element in the process, as well.

Mr. TAYLOR. Mr. Chairman, I hope to remain conscious of not allowing any inflated budget activities to go on where I am asking ratepayers and other businesses to pay the 100 percent fees. I think that is a big public responsibility.

I believe that our activities in the commercial nuclear powerplant area have been very effective in the past few years. I am very pleased to report to you that safety performance has improved. I don't believe we take all the credit for that; the industry does it, but I believe our influence and our ability to point out problems with individual plants has caused general performance, along with what the industry and organizations such as INPO have done to be safer.

I briefed your staffs a month or so ago and gave them some graphs and charts on the general performance across the industry. The indications are that all the problems that lead to challenges to reactor plant safety have been reduced. Significant events have decreased measurably over the last five years. The trips, the safety system challenges have been reduced—I think those are important things for the public and the Congress to understand. We will continue in that effort as one of our major priorities.

But I am always conscious of the limits of the public resource to be sure we don't exceed what we need.

Senator GRAHAM. Mr. Williams, I would like to go into some items that were raised in your testimony.

You mentioned that one of the issues that you investigated had to do with NRC witnesses before Congress. I don't know what the status is of those cases, so I am not asking you to make any statements that would be prejudicial or inappropriate. But within those limits, could you describe to me what was the nature of the allegations and what has occurred as a result of your surfacing them?

Mr. WILLIAMS. Yes, sir, there were two of those that I alluded to. As you indicated, there are aspects of both of those investigations that remain ongoing. In addition to that, we submitted the results to the United States Attorney for his examination, and after he completed his examination, we began the process of adjudication. The process of adjudication for both of those matters continues as well. As that completes itself, of course, I will advise you through your staff of the outcome of those matters. They were of great concern to us.

The allegations concerning the earlier matter are that the agency, in aggressively moving against an individual, violated a rule of law in a number of the procedures they were engaged in, and that personal animosity displaced and took the role, which is nominally assumed by a very specialized process and rules that were developed to assure that a level playing field is used when you conduct an investigation and an adjudication of a matter.

We also looked at allegations that inaccurate statements were made to Congress during that investigation. The second investigation concerned the examination of a very similar matter, retaliation against an agency employee a very short time after he testified before Congress. We tried to examine that matter as well. We again found that steps that had been put in place to assure fairness and to assure that actions would be taken by the rule of law were sidestepped and avoided, and that steps that ought to have been carefully avoided were taken to involve protagonists inside a long-running conflict that had occurred between the agency and this employee.

Those were the allegations we looked at. As I said, we submitted the report, of which I know you are aware, to the Department of Justice and to the agency, and action is currently being evaluated in both matters.

Senator GRAHAM. Mr. Taylor, any comments on that?

Mr. TAYLOR. No, sir, I don't have any comments.

Senator GRAHAM. On the Pilgrim issue and the evacuation plan, are you recommending any further follow-up as a result of that?

Mr. WILLIAMS. We will be undertaking aggressive audit follow-up work to what I think has been the aggressive plan developed by Mr. Taylor's task force. They seem to have a program in place which carefully scrutinized the process that had been undertaken in the past, and tried to form a plan for increasing the accuracy and competency of their work in the future. We will know more as we conduct the agency follow-up work, but I was pleased at the course of action that was outlined.

Senator GRAHAM. In each of these cases, the testimony to Congress and the Pilgrim case, did you find the alleged conduct to be the result of a systemic failure, or individual cases of unacceptable conduct?

Mr. WILLIAMS. First of all, in the case of the two investigations, as I said, we learned a number of lessons regarding systemic problems. We developed a new manual in which we hope principles that we learned and developed during the investigations were incorporated. We also learned to update the latest findings of the Department of Justice. We took a very serious look on the systems side and we hope that we have made those corrections.

There were some conduct charges that we examined. As I said, we forwarded to the agency—sometimes, no matter how good the system is, if there is misconduct that occurs, it's going to skip around and avoid the kinds of systems that we put in place. All we can do there is try to create a system where the risks of engaging in that kind of behavior are so outrageously high that apprehension is almost a certainty. Those are the kinds of steps that we have attempted to take.

On the Pilgrim side, our study there analyzed the inaccurate statements. We were curious as well, and concerned as well, that the staff had made these misstatements to the Commission when they were considering this very important licensing action. We think we've sorted through the inaccurate statements that were made by the staff. For each of those inaccurate statements they had a body of knowledge that they relied upon. It wasn't always derived from a good source. Sometimes the logic that was applied to the findings that they had was somewhat flawed. We didn't find evidence of more than that, of purposefully misleading the Commission and the Congress.

Senator GRAHAM. Mr. Taylor, if you would like to comment on any of these questions, please feel free.

Mr. TAYLOR. I would follow up on the Pilgrim matter. I took very seriously the findings of the IG. I believe that the staff interface with the Commission, which is formal, is very important. Although human beings interface at those meetings and present matters and sometimes make mistakes or inaccurate statements, it is very important that that bond between the staff, which has the broad technical experience and responsibilities to provide the Commission with the best information, has to be preserved. So I took very seriously the matter on Pilgrim. Besides the conduct of the 1988 work, which I reacted to by setting up a special task force on lessons learned, I also took very seriously the matter of inaccurate and incorrect statements before the Commission. I have taken appropriate action with the people involved, commensurate with what happened, and I am very sensitive to the fact that the Commission

should have nothing but the best and most accurate information humanly possible in its decision-making. So I think it was another lesson that I am extremely sensitive to.

Senator GRAHAM. In your statement, Mr. Williams, you indicated that under your investigative category there has been an increase in the number of allegations that have been submitted to your office. You indicated that maybe one of the reasons for that was that your office was better known, and therefore people were more likely—if they felt they had a circumstance that justified it—to submit it to you.

Do you have any reason to believe that the actual number of actions that would warrant such investigations has been increasing?

Mr. WILLIAMS. That's a very difficult question for any Inspector General to answer.

We have no indication of that. We think that the trend is healthy. This year has included some very tough reports out of my office. There is an environment inside the agency that is not conducive to taking a chance right now. I think people are very alert to the actions that they're taking. It has been a year in which there has been a lot of introspection on the part of all of the agency's components.

We feel generally positive about that. You can get to the point where people are so afraid that they won't act, and we don't think that's healthy and we don't want that to be the case. We do want them to engage in the kind of careful introspection of their actions that we believe they are undertaking now.

So I like the environment that is in the agency. We have tried to learn from the Inspector General hotlines and the number of allegations coming into them. We don't think that we're out of proportion with the number that are coming in.

Possibly commensurate with the quality of the staff that NRC has, we have slightly better allegations that are coming in. They are more well thought-out. More often they result in the opening of investigations than other agencies have experienced. But the number is not surprising. The quality of them is understandable, given the very careful scrutiny that NRC undertakes when it hires a person. We anticipated that those would be well-informed people on the other end of the telephone or corresponding with us, and that's just what we found.

Senator GRAHAM. In your last report to Congress you raised some questions about the resources to your office, and you alluded to that again in your report today. Could you comment as to your current state of resources in the context of such things as the increasing number of investigations?

Mr. WILLIAMS. Yes, sir. We are at the front end of a process of working with the Commission, which I would like to describe to you in a moment.

When I first arrived, the plans of the agency had been to maintain exactly the size and shape of the predecessor office, the Office of Inspector and Auditor. Shortly after I arrived we all came to understand that that was completely inadequate. The office had been plagued by very serious problems. In addition to that, the Inspector General Act called for broader actions than this internal audit group had imagined and undertaken prior to the act. It asked us to

engage in a number of activities which were not the mandate of the earlier office.

Unfortunately, at that time the budget process had already overtaken us for the coming year. As I mentioned, Chairman Carr was quick to provide us the kind of resources that would allow us to prop up this old structure while we were studying what kind of structure needed to emerge in the future. We spent the last year engaging in that. I was concerned enough in my last semiannual report that I wanted to report to you that we were concerned that in certain areas the resources were inadequate, specifically the audit areas. We need to tell you and to tell the Commission in a timely fashion that will be relevant to them what the problems are and what our level of assurance is and the efficiency and effectiveness of their operation.

As we conclude that study, we've now undertaken working with the Commission to let them know, in time for the budget that is coming up, what resource needs we imagine we will be needing for the future. We are coming to an understanding of that. The Commission early on has been very interested and very receptive to examining the problem, so we are in good shape this year. We are ahead of the planned curve for submitting such a budget, and we felt good about the agency support of that effort.

Senator GRAHAM. I hope that you will keep this subcommittee advised of your resource needs in relationship to what you consider to be appropriate activities.

Mr. WILLIAMS. Thank you, Senator. We have appreciated all the communications we have had with your staff, and we appreciate that opportunity, as well.

Senator GRAHAM. I have two or three more questions to you, Mr. Williams.

You mentioned relationships with other Inspectors General. Can you describe to me how you relate to IGs in other Federal agencies?

Mr. WILLIAMS. Yes, sir. I developed quite a relationship with them before becoming an IG. I worked with the General Accounting Office; I was director of the Office of Special Investigations. We worked very closely, and a very predictable early-on step in one of our investigations was to work with the Inspector General. I came to know them. They asked that I investigate them and their staff in a number of instances that were of concern to them and of concern to Congress, so I developed a relationship with them.

I am also an active participant in the President's Council on Integrity and Efficiency, which is a collection of all the Inspectors General and other enforcement officials, such as the Federal Bureau of Investigation and the Office of Management and Budget. We meet monthly as a routine, and we meet in between those times as special problems and particularly good opportunities present themselves that we want to examine together. We look at broad implications of new criminal violations and new audit concerns and agency vulnerabilities and exchange ideas and conduct studies that we exchange with one another. I am the chairman of the Council's subcommittee which establishes investigative standards for the criminal investigators of all the Inspectors General. I

am also examining the training which is required and ought to be prescribed for those agencies.

Senator GRAHAM. In my opening statement I mentioned our look at the Department of Housing and Urban Development. One of the suggestions that was made during those hearings was that there should be an established practice of periodic rotation of Inspectors General among Federal agencies in order to, defensibly, ward off the potential of the IG being co-opted, but also proactively, giving the Inspector General the opportunity to apply insights and knowledge from one agency in a new setting.

Could you comment as to what you think about that?

Mr. WILLIAMS. The President's Council hasn't done a great deal of work in that area, so if I may, I will tell you my personal view of that.

I think that that's a terrific idea. It is very important that that kind of cross-training and exposure and bringing into the community new ideas and bringing into an agency ideas that you've learned from other places—it is probably the most important thing that an Inspector General could bring.

The downside, of course, and NRC is a good example, is that each of the Inspectors General needs to undergo a learning curve, a period of time in which they educate themselves on how the agency conducts its business. In the case of the Nuclear Regulatory Commission, of course, that is quite technical. So I would hate for the rotation to be chaotic or not well thought-out. I would really think that, absent that, I couldn't think of a stronger way to assure independence and objectivity and the influx of new energy and ideas than the one that you proposed.

Senator GRAHAM. What is your relationship with the Office of Management and Budget? Do you submit your reports to them, as well as to the chairman of the NRC? And if so, what do they do with those reports?

Mr. WILLIAMS. We do not submit the reports to the Office of Management and Budget. On rare occasions in which they would express an interest in one of our particularly important reports, if it were an audit report we would, of course, supply that to them. That's a public document. On the investigative side, we would have to use all the precautions that the law prescribes, and we have done so.

As a routine, the Office of Management and Budget sits on and chairs the President's Council on Integrity and Efficiency. They are part of that Council and an active member of that. So there is that level of communication.

Beyond that, we only become involved when there would be some sort of a special request made of us for feedback, such as the Chief Financial Officers Act or some other initiative where they imagine that the Inspectors General would have some insight.

Senator GRAHAM. My last question. One of the issues that led to the establishment of the Office of Inspector General of the NRC was an allegation that the NRC had become too cozy with the industry that it regulates. Could you comment as to how you assess the current relationships between the Commission and the regulated industries?

Mr. WILLIAMS. Yes, sir, I can. Maybe I should begin at the beginning. I have spoken with Mr. Taylor; we have both been concerned at the very long history of allegations that concerned a less-than-arm's-length relationship that had existed from time to time between the agency and the industry. Some of those were clearly unfounded. Others of those left a feeling of suspicion and uneasiness on the part of our agency with regard to allegations that have been historically made.

It's not an issue that is unique to the Nuclear Regulatory Commission. Almost every regulatory body has that as a constant concern. I would only be concerned if they felt good about that. I think we always need to feel uneasy and we always need to be guarding very closely the bright line that needs to exist between the industry and the agency that regulates it. I think that any kind of surreptitious advocacy of the industry isn't proper. It's something that we need to guard against carefully.

We have done a little work on that this year. We want to do more work each year, and I'll know more about it each year as that body of knowledge accumulates. But it's never something that I want to close the books on. By the nature of the regulatory process, it's something that we never want to let up on. We want to guard that line very closely.

I was concerned at the findings in the Pilgrim investigation. I was concerned again in the investigation of the level of undisclosed support that we gave petition-makers, writing portions of the petition and suggesting ideas for petitions. That wasn't something that I felt good about, and the agency didn't feel good about it, either. They developed substantial changes to that process.

Those are the two bodies of work. We are aware of the GAO examination of an industry group's relations with the agency. We are anxious to examine that when they've completed it. For the future, we've begun work that will reflect on a couple of other experiences that the NRC has had with relating to the two interest bodies, the interest group that is focused on nuclear safety and the industry group that is focused on the regulation of the industry and the efficient and effective operation of the industry.

Some of the work that we're doing this year is to assure that we're carefully examining the matters brought before us by the interest group that is concerned with and focused on safety. We know a little about it. We were disturbed over some of the things we found. The Executive Director was very quick to examine those. He was as concerned as I was, and corrective action was taken. It's just something we can never let up on.

Senator GRAHAM. Do you have any comments on that?

Mr. TAYLOR. I would welcome that. Through the long years of oversight of the industry and the various industry groups that exist, I think it's quite appropriate that that be looked at. I believe the GAO is looking, as the IG mentioned, at one part of that, and I welcome the criticisms that may arise from those reports. We'll act on them.

I think it's a fine line. We obviously interact every day across the industry, residents, regional people, myself, others, program directors, so it is a constant challenge to watch that line. I'm sure exam-

ples will be found where somebody has wandered over. I hope we can pull them back and that it is not a frequent occurrence.

But I would welcome suggestions as to how to strengthen that. I think it's very important that the people recognize that that line is respected.

Senator GRAHAM. Mr. Taylor, in your statement you mentioned the fact that the research program of the agency is reviewed by outside experts. I understand that several years ago the National Academy of Sciences was critical of the NRC's research program. Could you comment as to what the effect was of the criticisms of the Academy and how they were responded to? And how do you use outside evaluators of your research program currently?

Mr. TAYLOR. I would have to provide details on that for the record, sir. That goes back a couple of years, and I will do that.

[The following is an excerpt from information submitted by the NRC in response to the above. Material not reproduced here has been retained in Committee files:]

U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC.
April 1, 1991

Hon. Bob Graham, *Chairman*
U.S. Senate
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works, Washington, DC.

Dear MR. CHAIRMAN:

I am writing in response to your inquiry at our hearing on March 19, 1991, regarding the National Academy of Science's review of the NRC's research program in 1986 and the status of NRC's legislative exchange regarding the provision of authority for imposing civil penalties for the supply of defective parts.

The National Academy of Science's review was conducted and completed by the National Research Council in 1986 and a report, "Revitalizing Nuclear Safety Research," was published that year. I indicated that I would supply NRC's responses to the recommendations in that report for the record. They are provided in the enclosed NRC document, "Disposition of Recommendations of the National Research Council in the report 'Revitalizing Nuclear Safety Research' " (NUREG-1325).

As a result of the National Research Council's recommendation, the Commission approved the organization of a Nuclear Safety Research Review Committee (NSRRC) comprised of distinguished individuals, skilled in relevant technology and science to advise on matters pertaining to the management of the safety research program. A list of NSRRC members is enclosed. This committee, which is a Federal Advisory Committee, has been functioning since 1988. One of the NSRRC areas of focus has been a followup to the recommendations of the National Research Council's Report. I have also enclosed copies of formal correspondence between the NSRRC and the Office of Nuclear Regulatory Research as they include information on how this Advisory Committee has functioned since its inception.

With regard to your concern about proposed legislation, the NRC submitted its legislative proposals to Congress on March 22, 1991. That proposed legislation includes provisions which would be useful in our efforts to prevent the use of defective or counterfeit parts.

If I can be of further service in this regard, please let me know.

Sincerely,

JAMES M. TAYLOR
EXECUTIVE DIRECTOR FOR OPERATIONS

Current NSPRC Members

(March 27, 1991)

Name	Title	Organization	Field
D.L. Morrison	Dr.	Mitre	Chemistry
N.E. Todreas	Prof.	MIT	Mech. & Nucl. Engr.
R. Wilson	Prof.	Harvard	Physics
S.H. Bush	Dr.	PNL	Metallurgy
H.S. Isbin	Prof.	U. Minn. (ret)	Chem. & Matl. Sci.
R.E. Uhrig	Prof.	U. Tenn. & ORNL	Nucl. & Mech. Engr.
S. Burstein	Mr.	Wisc. Elec. (ret)	Mech. Engr.
D.L. Turcotte	Prof.	Cornell	Geo Science
E.E. Kintner	Mr.	GPU (ret)	Nuclear Physics
D.D. Woods	Prof.	Ohio State	Psychology
R.C. Vogel	Dr.	EPRI (ret)	Chemistry
F.J. Molz	Prof.	Auburn	Hydrology

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Nuclear Safety Research Review Committee
Washington, D.C. 20555

21 December 1990

Eric Beckjord, Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Beckjord:

Attached is a copy of the Report on NRC's Research Strategy from the Nuclear Safety Research Review Committee. The findings and recommendations in the report were developed by the NSRRC at its meetings on September 25 and 26 and November 8 and 9, 1990. Sections from the draft FY91-FY95 Five Year Plan were used by the NSRRC to focus on the strategy and content of a research program that will meet NRC's essential regulatory requirements.

The NSRRC finds the research programs described in the Five Year Plan consistent with the regulatory mission of the NRC, responsive to the needs identified by the user offices, and directed at the strategic research requirements. The process by which the plan has been developed and its content are judged satisfactory and acceptable. RES management and staff are to be complimented on their dedication and professional attention to fulfilling essential research and technical requirements of the NRC through a number of years of budgets.

It should be noted, however, that stable research funding is essential to maintain a credible technical capability within the NRC and its contractors to deal with regulatory issues as they arise, and that additional funding may be required to develop requirements for the new technologies such as advanced reactors that are being placed under regulatory oversight. The NSRRC plans to review these issues in subsequent meetings.

Sincerely,

David L. Morrison
Chairman
Nuclear Safety Research Review Committee

Attachment

DLM/jho

REPORT ON THE

U.S. NUCLEAR REGULATORY COMMISSION'S

RESEARCH STRATEGY

FROM THE

NUCLEAR SAFETY RESEARCH

REVIEW COMMITTEE

December 21, 1990

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SUMMARY

The Nuclear Safety Research Review Committee (NSRRC) was asked by the Executive Director for Operations, U.S. Nuclear Regulatory Commission, to "consider what the strategy and content should be for a research program designed to meet NRC's essential regulatory requirements."

The NSRRC concurs with the Office Directors that NRC's research program should include the following requirements to be addressed in the order listed:

1. Provide technical basis to confirm safety margins assumed in regulatory decisions.
2. Lead to the timely resolution of generic safety issues.
3. Develop requirements for new technologies being placed under regulatory oversight, such as waste and advanced reactors.
4. Develop new and improved methods of safety analysis.
5. Maintain technical capability to deal with regulatory issues as they arise.

In addition to the knowledge of the research program that the NSRRC gained since its inception in 1988, the principal document used in the current strategic assessment was two sections from the draft FY91-95 Five Year Plan (FYP), the Nuclear Safety Research Mission Area and Confirming the Safety of High-Level Waste Program. The NSRRC finds the research programs described in the FYP consistent with the regulatory mission of the NRC, responsive to the needs identified by the user offices, and consistent with the research program requirements identified above. The process by which the plan has been developed and its content are judged satisfactory and acceptable with one major exception. The FYP does not address specific research for advanced reactors, and the NSRRC recommends that RES and the NRC give prompt attention to this important issue.

The distribution of funds across the major program areas of the FYP is appropriate given current needs and available funds. It would be difficult, however, to sustain a viable nuclear safety research program to support the NRC if the current budgets are decreased. In fact, budget increases will be needed to address the requirements for new technologies under regulatory oversight.

REPORT ON NRC's RESEARCH STRATEGY
FROM THE
NUCLEAR SAFETY RESEARCH REVIEW COMMITTEE

December 21, 1990

INTRODUCTION

In a letter dated May 4, 1990, from James M. Taylor, Executive Director for Operations (EDO), U.S. Nuclear Regulatory Commission, to Carlyle Michelson, Chairman, Advisory Committee on Reactor Safeguards, the Director of the Office of Nuclear Regulatory Research (RES) was asked "to have the Nuclear Safety Research Review Committee consider what the strategy and content should be for a research program designed to meet NRC's essential regulatory requirements." During its meeting in June 1990, the Nuclear Safety Research Review Committee (NSRRC) accepted the task to perform a strategic assessment of NRC's research program.

This report presents NSRRC's findings and recommendations that were developed in its meetings on September 25 and 26 and November 8 and 9, 1990. In addition to the knowledge gained by the Committee since its inception in 1988, the principal document used in the current strategic assessment was two sections from the draft FY91-95 Five Year Plan (FYP), the Nuclear Safety Research Mission Area and Confirming the Safety of High-Level Waste Program. NSRRC also was briefed by RES staff on the elements of the plan and met with the Executive Director for Operations and the Director of the Offices of Nuclear Reactor Regulation (NRR), Analysis and Evaluation of Operational Data (AEOD), Nuclear Material Safety and Safeguards (NMSS), and Research (RES). During its review, the Committee had the benefit of clarification, correction, and updating of the FYP by the RES staff.

NRC RESEARCH REQUIREMENTS

As a common basis for the strategic assessment of the research program, the Committee addressed the requirements for research by the NRC. The NSRRC drew heavily upon the experience of its members, the statement of philosophy in the FYP, the need for research portrayed by the Office Directors, the recommendations of the National Research Council's Committee on Nuclear Safety Research[1], and recent comments expressed by the Advisory Committee on Reactor Safeguards[2]. As stated in the FYP, the NRC mission is to ensure the safe design, construction, and operation of the nuclear facilities and activities that it regulates. NRC maintains that it is essential to do research and develop knowledge that gives confidence in its judgments and provides the technical basis for writing safety regulations and evaluating licensee performance. In addition, since unforeseen safety problems continue to arise from operating experience, the NRC must have readily available sources of expertise in order to solve these problems promptly.

Thus, the NRC nuclear regulatory research program has three main purposes: (1) to provide information and independent expertise for making timely regulatory judgments; (2) to anticipate problems of potential safety significance for which new or expanded knowledge can assist NRC in pursuing its mission; and (3) to develop the regulations and guides necessary to implement Commission policy or technical requirements.

The NSRRC concurs with this general philosophy and purpose for regulatory research by the NRC and accepts the following statement of research requirements that have been derived from the presentation of the Office Directors. NRC's research program should:

1. Provide technical basis to confirm safety margins assumed in regulatory decisions.
2. Lead to the timely resolution of generic safety issues.
3. Develop requirements for new technologies being placed under regulatory oversight, such as waste and advanced reactors.
4. Develop new and improved methods of safety analysis.
5. Maintain technical capability to deal with regulatory issues as they arise.

The research program within NRC has evolved over time to meet the regulatory needs defined within the NRC by the various user offices and the Commission. In 1987, the NRC prioritized its generic safety issues[3] as a means to make timely and efficient allocation of resources. RES has applied risk criteria to prioritize the research program within this list, and at the same time, has attempted to respond to the user offices. The process and framework that has been used is sound, and NSRRC generally concurs with the priorities that have been set. It is NSRRC's view that the five research requirements that are listed in the preceding paragraph comprise a comprehensive program and are in the order that they should be addressed. There are no significant requirements missing from the list, nor are there any that should be eliminated. In addition, the distribution of funds across the major program areas of the FYP (Integrity of Reactor Components, Preventing Damage to Reactor Cores, Reactor Containment Performance, Confirming the Safety of Low-Level Waste Disposal, Confirming the Safety of High-Level Waste Disposal, and Resolving Safety Issues and Developing Regulations) is appropriate given current needs and available funds. It would be difficult, however, to sustain a viable nuclear safety research program to support the NRC if the current budgets are decreased. In fact, budget increases will be needed to address the requirements for new technologies under regulatory oversight. Comments are made in subsequent sections of this report under the major program areas that reflect recommendations on specific program elements and projects within them.

Several general observations on the research program and its management merit attention. The process through which NRC's research program is structured involves the identification and definition of specific technical and information needs by the user offices. RES collects and assesses these needs and formulates the research program to be responsive to the needs based upon priority and available budget. This process has successfully focused the research program on existing or near-term issues, and the committee strongly supports its continuation. As the user need process has been evolving, more dialog has occurred between the user offices and RES. A word of caution, however, is in order so that the responsibilities for research and regulation are clearly separable. While review of progress and interaction with the contractors is an effective means to achieve transfer of knowledge to the user, it should remain the responsibility of RES to direct and coordinate the contractors' efforts and to seek cooperative and constructive reviews. Also, strong headquarters direction of research programs is essential for their success.

With regard to research requirements and their priority, the public needs confidence that nuclear power plants can be designed, built, and operated safely and reliably for periods of 40 or more years. Through its research programs, NRC must assure the public that its decisions have a sound technical basis that is not limited to the information provided by licensees but is complemented by information and judgments of technical peers. Thus, in terms of programmatic importance, this requirement is the highest priority.

Despite declining budgets over the past six years, RES has made significant progress in the timely resolution of safety issues. Accomplishments include the use of experimental pipe fracture test results to revise 10 CFR 50, Appendix A, to accept leak-before-break for piping meeting rigorous acceptance criteria; completion of experimental research on ECCS performance and revision of the ECCS rule to permit use of best-estimate analysis; substantial progress has been made in experimentally validating severe accident models that form the basis of NUREG 1150; and the completion of risk analyses for five plants with full documentation and comprehensive peer review. NSRRC commends RES on the management practices it has implemented to achieve a fair return from its research investments to resolve safety issues and encourages RES to move diligently to bring other issues to closure on a timely basis.

Both low-level and high-level waste regulatory requirements are needed by the DOE, states, and the nuclear industry. Given the various federal laws that govern waste policies, NRC's research role is narrowly circumscribed. It is important that RES manage and direct its research efforts in coordination with other responsible parties to achieve results in a timely basis.

Research on advanced reactors has not been explicitly addressed in the FYP. The Committee considers the timely development of advanced reactor safety requirements to be highly important to the preservation of the nuclear option in the United States and has placed this topic on its agenda for a meeting in the latter half of 1991. Specific comments on NRC's program plans which are currently being prepared are reserved until that meeting.

Development of new and improved methods of safety analysis remains a valid function of RES, and in the future new methods to deal with aging are expected to evolve. New methods developed only for their novelty do not lend reliability and predictability to the regulatory process, but simplifications and

improvements in methodologies that take advantage of new data and advances in scientific understanding are encouraged. Resolution of safety issues mentioned previously was accomplished in part with the aid of analytical models developed in NRC programs.

The Committee supports the premise that the NRC must have access to credible technical capability to address its regulatory requirements and to provide independent judgments on key technical issues. The Committee will continue to review relevant RES activities such as the influx of expertise within the NRC RES divisions, retention of expertise among contractors, and development of expertise within universities. Funding stability and challenging research topics are critical factors in the retention of technical capability.

Underlying each of the research requirements is a fundamental tenet of the regulatory process that NRC obtain, through its research program, the ability to make an independent judgment of the technical issues in each of its actions. It is not, however, necessary that the NRC develop through its research program, an independent base of knowledge or pursue research programs independent of licensees. Unnecessary duplication of research is not a precondition to independent judgment and with research requirements generally exceeding available budgets, NRC's research office like all other research operations must continue its efforts not to duplicate relevant research that is being performed by other organizations in the U.S. and abroad. In fact, through its staff, RES must be fully cognizant of all relevant reactor safety research information regardless of its source. For the foreseeable future, international research programs will be a significant source of important safety data, and the Committee encourages RES to maintain its contacts with other nations and to participate where there is an advantage to multiply its investments in non-U.S. programs.

RESEARCH PROGRAM PRIORITIES

During its discussions pertaining to the strategy and content of the research program and the review of the FYP, the NSRRC identified a number of issues worthy of specific comment. Time did not permit an in-depth review of the FYP, but these issues are judged by the Committee important to bring to the attention of RES management. Some of the comments that follow relate to priorities within major program areas while others address program area content. Since the review was not comprehensive, the topics that follow do not necessarily track the FYP.

REACTOR COMPONENT AND CONTAINMENT STRUCTURAL INTEGRITY

The highest research priorities should be given to programs addressing significant risk consequences for operating nuclear power plants and the four highest priority programs are:

- Pressure Vessel Safety
- Aging of Reactor Components
- Inspection Procedures and Techniques
- Containment Structural Integrity

Presently these four programs account for more than 75% of the funds allocated to the reactor component and containment structural integrity programs.

The Pressure Vessel Safety program warrants high priority because of the consequences of failure and because of the uncertainties related to irradiation embrittlement, pressurized thermal shock and the implications of plant life extension (PLEX). Due to the long term nature of the research tasks and the importance of pressure vessel integrity to power plant safety, continued support of this program area will be needed for at least the next five years.

Aging is another high priority topic. Essentially all degradation mechanisms can be loosely collected under the aging heading. With PLEX, a major item under review, aging becomes particularly important.

Concerns here include both pressure boundary degradation and the loss of functional reliability. It is recognized that aging processes occur within the initial license term for which present regulations are appropriate to assure public health and safety. Care must be exercised to avoid using PLEX as justification for revising established criteria. Most of the significant research in this area should be completed during the next five years under the current funding plan.

Nondestructive examination (NDE) still remains the principal method for detecting growth of cracks before they reach a critical size. While major progress has been made in improving the reliability of NDE for both detection and sizing of flaws, there still remain many uncertainties. Through successful completion of the tasks currently planned, a number of uncertainties will be resolved and funding of this program area can be reduced in the future.

The structural integrity of containment program addresses a number of unresolved questions related to steel containments typical of BWR's and of concrete containments. Furthermore, the international interest in the area is high so research can be funded in collaboration with Japan. Due to the importance of containment integrity to safety and the opportunities to participate in international programs, continuous funding of this high priority area over a five to ten year period should be planned.

The remaining lower priority programs are:

- Engineering Standards Support
- Seismic Research Applications
- Structural Research
- Plant Response to Ground Motion
- Piping Integrity

Not included is consideration of specific research of advanced reactors; however, much of the Division of Engineering work that is currently planned is applicable. As previously noted, when the research needs for advanced reactors are clarified and a research plan is developed, the NSRRC will review this topic in more depth.

Engineering standards are means by which research/engineering data are converted to design and regulatory positions. Valve functional reliability, a subset of reactor qualification, is included here. Due to the nature of this task, sustained funding for the foreseeable future is needed.

The RES program on seismic applications has as its purpose the incorporation of research results into regulations. Some of the activities include fragilities of electrical components, seismic margins, embrittlement of reactor vessel supports, stress corrosion mitigation, piping dynamic response and post-earthquake response. Continuation of this program at present levels of funding is appropriate to make effective regulatory use of emerging seismic information.

Structural research addresses structural reliability as affected by aging. As such, the task priorities and funding patterns should parallel the aging program.

Plant response to ground motion is self explanatory. Collaborative funding can provide access to all the data of joint programs such as the EPRI/Tai-Power program in Taiwan. Significant information is expected to be obtained over the next five years.

Piping integrity covers a variety of programs which the NSRRC classifies as medium to low priority. These programs include: fracture of large pipe under simulated seismic loads; confirmation of leak-before-break; stress corrosion of ferritic steels; irradiation assisted stress corrosion cracking; and environmental effects on fatigue. While piping integrity is important, many of the vital results have been obtained. Hopefully open issues in piping, particularly fracture, leak-before-break, and stress corrosion, should be closed over the next five years. Fatigue may require a longer time for closure.

SYSTEMS AND SEVERE ACCIDENTS

Over the past several years, the subject of severe accidents has been under extensive review by the NRC and the nuclear industry. A special committee of the American Nuclear Society has recently prepared a report[4] on NUREG 1150 as has the special committee of the NRC[5]. These documents were considered by the NSRRC in its review of the systems and severe accident programs underway and planned

by RES in the FYP under the headings of " Preventing Damage to Reactor Cores" and "Reactor Containment Performance." The NSRRC generally concurs with the strategies and program elements and has reassured itself that the recommendations in NUREG 1420 are indeed already in place and/or under consideration by RES. Comments on several specific programs follow.

Thermal Hydraulics

The Committee agrees with RES's past assessment to reduce the thermal hydraulics programs to a size consistent with the maintenance of a cadre of experts to handle anticipated regulatory needs. Such an assessment procedure might well be adopted for other regulatory research program areas. The Committee has the following observations on the FYP for thermal hydraulics:

- Integral Systems Loops for Advanced Passive LWRs

  The Committee believes that these tests are essential and that the RES activity should be confirmatory.

- Thermal-Hydraulic Research Center at the Idaho National Engineering Laboratory

  The Committee supports the concept of the Thermal-Hydraulic Research Center as a vehicle for executing research and retention of contractor cadre for answering regulatory questions. However, the technical quality of such a center needs to be periodically audited including peer assessments.

- Cooperative Testing in International Facilities

  The Committee strongly endorses cooperative international testing as a means to access additional safety information and to leverage funding.

Accident Management

The Committee agrees that accident management is a key near-term focus of industry/NRC activity regarding severe accident considerations. The RES program as presented in the FYP is rather general, and a more detailed program plan was presented to the Committee by RES staff.

The IPEs will directly lead to accident management strategy development. More than half of the IPEs will use the EPRI MAAP code. Although no mention of an RES assessment activity of MAAP exists in the program plan, the Committee understands that such an assessment is underway. Due to the importance of this effort to accident management strategy, the Committee will review the assessment at a future meeting.

Key issues in any strategy will involve uncertainties in the consequences of adding water and turning on ignitors after hydrogen contents have reached inappropriate levels in the containment. Data needs and tests regarding water addition are scheduled for FY92 and beyond. Experiments are identified which start in FY91 and stretch through FY95. Both areas need reassessment of the timeliness of test needs.

Severe Accidents

This area has been the focus of recent RES evaluation and restructuring. The phenomena involved are difficult to evaluate comprehensively, and thus it has not yet been possible to structure the program to lead directly to closure. Nevertheless, the area activities have been segregated into nearer (containment performance issues) and longer (understanding of severe accidents) term categories with a sharper focus drawn on the questions which the nearer term activities should answer. Continuing effort needs to be placed on this area to expedite closure through identification of phenomenological uncertainties and directed reduction of those uncertainties which are risk dominant.

There are a number of programs involving the mechanics of core melt, discharge of corium through the bottom head and the behavior of corium in the containment. These are important problems and are difficult to bring to conclusion. The Committee recommends continued close monitoring of experimental research tasks and results in this program area to assure that closure is achieveable.

The Committee concurs with RES's employment of the integrated approach used in the methodology of NUREG/CR-5423, Risk Oriented Accident Analysis Methodology[6] to resolve the Mark I liner melt issue. RES also is giving emphasis to Severe Accident Scaling Methodology, and as a first step, is planning scaled experiments at Sandia and at the Argonne National Laboratory to characterize the importance of the direct containment heating issue. The Committee recognizes the complexities of reaching conclusions using simulated core melts and suggests that the interpretations of the test results be peer reviewed.

The Annular Core Research Reactor is to be used for certain tests. Since it is a small reactor, the Committee suggest that RES assure itself that the experiments are sufficiently applicable to the phenomena on a larger scale.

It is noted that the Westinghouse data (one seventh scale) on natural circulation of hot gases in the reactor coolant system are being evaluated. In FY91-93, according to the plan, the appropriate codes will be evaluated. Further discussions with the staff indicated that the work will actually be completed in FY92. Inasmuch as the outcome of this program can influence the scope of the work on direct containment heating, the Committee agrees with RES on the importance of this program.

GEOLOGICAL STUDIES

Earthquake Hazards

Probabilistic seismic hazard assessment has been a major success of the NRC research program. The NRC study carried out by the Lawrence Livermore Laboratory and the parallel study carried out by EPRI have placed upper and lower constraints on the seismic hazard for nuclear reactors in the Eastern United States. These studies provide probabilistic assessments on a variety of data inputs and should be continued as planned to reduce the spread between the upper and lower bounds.

It is recommended that two aspects of the present program receive priority in the future:

1. It is essential to monitor the level of seismicity throughout the United States. The establishment of the National Seismic Network (NSN) is a reasonable consolidation of the regional networks previously funded by the NRC but the installation and operation of the NSN must be closely monitored. In particular, the large data flow needs to be evaluated for the specific requirements of the NRC.

2. Paleoseismic studies should have a continued high priority. It is recommended that a major effort be undertaken to find appropriate sites for these studies throughout the Eastern United States in order to better constrain the seismic hazard at nuclear reactors. If appropriate sites are found, then trenching operations should be undertaken to obtain dates for paleoearthquakes.

Groundwater Hydrology and Related Programs

Both high-level and low-level radioactive waste disposal sites will be a major concern to the NRC in the next 10-20 years. Other agencies (particularly DOE) have substantial research programs but there is clearly an important role for the NRC. It is recommended that the NRC emphasize a "systems" approach to the geological hazards associated with both high-level and low-level waste disposal. The objective would be to develop quantitative assessments of the probabilistic hazards associated with leaking repositories. Necessary inputs include probabilistic flow models for both saturated and unsaturated media, chemical interactions between radionuclides and the matrix, and climate models. Much relevant research is now supported by the NRC both at CNWRA and elsewhere. It is recommended that this research be closely monitored to ensure that it is contributing to overall objectives. Care must be taken that numerical modeling and laboratory studies are relevant to natural phenomena. The complex permeability structures in various geological terrains must be taken into account, and wide range of chemical processes must be considered. Analog studies can play an important role in constraining models. The present Alligator Rivers and Valles Cadera projects should be continued to completion.

WASTE MANAGEMENT

There are clear similarities between the high- and low-level waste disposal programs in terms of the concerns (radionuclide releases and health effects), overall objectives, and the technology (burial) being used for disposal. It is also clear that the differences are significant enough to warrant programs focused on each disposal technology, e.g., different timeframes, significantly different source terms, different disposal environments, and different design, siting, safety, and environmental standards. In spite of these differences, the programs need to be closely coordinated so that the participants in each program are aware of relevant significant developments in the other. In particular, the far field transport modeling and the overall approaches to performance assessment may be addressing very similar problems and might benefit from greater mutual exposure. There is complete integration within the Waste Management Branch in RES with many project managers having both high- and low-level waste projects and with some efforts such as INTRAVAL bringing both groups of researchers together. It is recommended, however, that explicit

consideration should be given to maximizing such interactions. INTRAVAL also offers a mechanism to factor the research products of CNWRA into the low-level waste program.

High-Level Waste (HLW)

The high-level waste program is unique because of the long life of the hazard (and the associated regulatory period -- 10,000 years) and the inexperience with disposal in deep geological systems. Some work on geologic systems, i.e., volcanism and regional tectonics, which is scheduled to begin when resources are available, may be critical to the probabilistic hazards analysis and should receive high priority for additional resources.

Low-Level Waste (LLW)

The low-level waste program is in a critical stage. It is only now developing a performance assessment approach that includes materials and engineering (looking at waste form performance and performance of concrete structures over 500 years), hydrology and geochemistry (looking at real time flow and transport phenomena), and compliance assessment and modeling (developing performance assessments and validation studies). Given the fact that up to 10 or 12 license applications may be submitted in the next six years, it is concluded that this program is a minimal effort to support license reviews and evaluations involving adequate analyses of demonstration of compliance with regulatory requirements.

The Center for Nuclear Waste Regulatory Analyses (CNWRA)

The success of the radioactive waste program will depend critically on the success of the CNWRA. Great care should be taken in the supervision of the staffing and directions of research at the Center. The NRC has two advisory groups, Advisory Committee on Nuclear Waste (ACNW) and NSRRC, providing oversight on the CNWRA program. It is recommended that the NRC use appropriate external peer review mechanisms for the CNWRA program to ensure that the research at the CNWRA is maintained at the highest level.

HUMAN FACTORS RESEARCH

There are many signs that the NRC is committed to a vigorous program of human factors research. Each of the research items identified by the National Research Council has been addressed by RES.[7, 8] The five major research areas recommended by the National Research Council in its 1988 assessment [9] were: human-system interface design; personnel subsystems; human performance; management and organization; and the regulatory environment. The NRC should continue it commitment to rigorous and high quality human factors programs. Continuity of funding is important.

Effective human factors research and applications require a systems approach to ensure that nuclear power reactors are being designed, constructed, and operated in a manner that they are fault-tolerant of human error. Isolated treatments of micro-issues will not provide the base for effective regulatory applications. This is a major challenge to RES and can be facilitated by engaging experts in behavioral and social sciences in research programs or as peer reviewers.

In order to maintain a cost effective research effort and to aid in onging strategic planning, periodic reviews of other research with implications for nuclear related human factors should be commissioned. Candidate areas include high reliability organizations, human-computer interaction for dynamic and complex domains, approaches to measure what is a "good" computer-based display system, and models of human performance. For these to be useful the review team must combine high expertise in the technical area in question and knowledge about how this area is relevant to nuclear specific issues.

There is an increasing trend to use computer display systems as the primary "window" by which users see and interact with the nuclear plant processes. This creates special challenges for the design of computer based display systems, decision aids, and expert systems, including questions about allocating functions between person and computer. This is a very important area for work to establish the basis for future regulatory positions.

The NRC is justifiably concerned with software verification and validation. RES needs to engage contractors with expertise in software engineering, verification and validation, and the process of software development.

Large amounts of research on shift scheduling, fatigue and vigilance already exist. What remains for the NRC is to synthesize this knowledge base for application to the nuclear industry. Given that fatigue related effects are believed to be a potent performance shaping factor which increases the rate of occurrence of a wide variety of types of human error, improving practices in this area is one relatively easy way to achieve significant improvements in human reliability and therefore plant safety.

Work has begun in the area of management and organization. Continued effort in this area is warranted although progress may be slower than in other areas.

RES should work to model the human contribution to risk. The work should focus first on developing better models and only then consider how to integrate and use those models in the context of plant PRA studies. Human performance modeling should also be used to understand the implications of various operational incidents (in support of AEOD) and to evaluate the impact of changes in the plant's person-machine systems. The Committee cannot emphasize strongly enough that developing good models depends on empirical data about human performance. In this light, the initial work on examining procedure violations that occur at operating units should be continued to provide data for model development and understanding of human contribution to risk.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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FEB 1 1991

Dr. David Morrison, Chairman
Nuclear Safety Research Review Committee
The MITRE Corporation
7525 Colshire Drive
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Dear Dr. Morrison:

The purpose of my letter is to respond to the Committee's Report on NRC's Research Strategy, dated December 21, 1990. I have carefully reviewed the report, as have the senior staff of RES, and find that it is very helpful, comprehensive, and timely. This report, in direct response to the Executive Director for Operations' request for consideration of the strategy and content of a research program to meet NRC's essential regulatory requirements, is another major contribution from the NSRRC that I will apply to clarifying objectives, setting priorities, planning, developing the budget, and assuring the quality of research.

The Committee's report, as we understand it, concludes that the research program is largely meeting NRC's essential regulatory requirements. In summary, the report states that the needs identified by the user offices are complete, the research program is responsive to those needs, the research program is consistent with the regulatory mission, and the distribution of funds across the major program areas is appropriate. The report also endorses the strong headquarters direction of research programs and the need to assure that decisions have a sound technical basis; it acknowledges significant progress in the timely resolution of safety issues and the completion of PRAs for five plants with full documentation and comprehensive peer review (NUREG-1150). The report further supports the premise that the NRC must have access to a credible technical capability and that NRC ensure, through its research program, the ability to make independent judgments.

The Committee points out one area in the research program that requires a major augmentation, and that is the area of research for advanced reactors. You also recommended prompt attention to this important issue during NSRRC meetings last fall. We fully concur with your recommendation, and in fact we have been developing a comprehensive Advanced Reactors Research Program since last year. The pace of the program development is set, to a large extent, by the status of the advanced reactor designs and the degree to which user needs have been defined by the Office of Nuclear Reactor Regulation (NRR). Over the last several months we have received a first set of advanced reactor user needs from NRR, and have had a number of meetings with both NRR and the advanced reactors vendors. As a result we are now able to accelerate our research program development. In addition, we have organized a new Advanced Reactors Branch to deal exclusively with these considerations, and we are revising the FY 1992-1996 Five Year Plan to include a new program area on advanced reactors in the Nuclear Safety Research Mission Area. I have recommended significant and appropriate budget allocations for this new program area.

I am pleased with the extent of your report: it contains more than 60 specific observations or conclusions. We have looked closely at these, as well, and note especially your comments on the following:

1. Major progress has been made in non-destructive examination, and a number of uncertainties will be resolved through currently planned tasks.

2. Due to the importance of containment structural integrity, continuity of funding of this area over a 5 to 10 year period should be planned.

3. NSRRC generally concurs with the systems and severe accidents program elements and has reassured itself that the Kouts recommendations (NUREG-1420) are already in place or under consideration.

4. The Committee agrees with reductions of the thermal-hydraulics programs to a maintenance level.

5. The Committee believes that integral systems loop tests for advanced passive LWRs are essential and that the RES activity should be confirmatory.

6. Many IPEs will use the industry MAAP code and the Committee will review NRC's assessment of MAAP.

7. Accident management areas of adding water and turning on ignitors need reassessment regarding the timeliness of scheduled tests.

8. Continuing effort needs to be placed on severe accident research to expedite closure through identification of phenomenological uncertainties and directed reduction of those uncertainties which are risk dominant.

9. The Committee recommends continued close monitoring of experimental research tasks and results in the area of core melt, discharge of corium through the bottom head, and the behavior of corium in the containment.

10. The Committee concurs with the employment of the integrated methodology in NUREG/CR-5423 to resolve the Mark-I liner melt issue.

11. The installation and operation of the National Seismic Network must be closely monitored.

12. Paleoseismic studies should have a continued high priority.

13. It is recommended that the NRC emphasize a "systems" approach to the geological hazards associated with both high-level and low-level waste disposal.

14. It is recommended that the NRC use appropriate external peer review mechanisms for the Center for Nuclear Waste Regulatory Analysis program to ensure that research at the Center is maintained at the highest level.

15. Effective human factors research can be facilitated by engaging experts in behavioral and social sciences in research programs or as peer reviewers.

16. RES should work to model the human contribution to risk.

I agree with these observations and intend to follow through on them to the extent possible, considering priorities and the final FY 1992 budget. I expect to discuss these and the remainder of your recommendations, on which I have not commented for reasons of brevity, in the course of the NSRRC program reviews during the year.

I am aware of the efforts you and each Committee member have put into the review of the research program for the purpose of writing this report. It is important not only for the advice for planning and development of the research program, but also for the support that it expresses for the program that is serving the user needs. I appreciate your work, and thank you very much for taking on and completing this task.

Sincerely,

Eric S. Beckjord, Director
Office of Nuclear Regulatory Research

Mr. TAYLOR. I believe that a special committee that got set up followed that criticism. It caused us to set up a Nuclear Safety Research Review Committee, because we felt like we needed independent views. I sat in on a meeting of that committee. These folks are quite outspoken and really give us some very good insight. I believe that group was set up as a direct result of some of that criticism.

The ACRS itself overviews our research activities, too, so we have a number of different groups that give us independent thinking.

The research generates largely from the program office needs. For example, in the new reactor designs that are being proposed, we are actively pushing research work for that area. We are also pushing for research related to life extension with a proposal to renew licenses for as much as 20 years. That's a very important act on the part of the agency. We have put out a proposed rule; we expect to have a final rule out on that subject in the next couple of months. We are working on the environmental impact statement and the rule covering that even as we speak.

So those are very important areas that are supported by research, and frankly, I believe we're trying to get as much outside criticism as is reasonable.

I will give you more details on that National Academy report.

Senator GRAHAM. The Inspector General—and the staff, I understand—has recommended that the Commission modify its regulations relative to the reporting of defects that could create a substantial safety hazard. I understand the Commission has not acted on these recommendations at this point. Could you comment?

Mr. TAYLOR. The Commission has told me, through internal means, that they agree with the position of the Inspector General. This was looked at carefully by the Commission in their first consideration. It has to do with setting a fixed period of time for a vendor or supplier to evaluate a safety matter, and then make the decision to report. If you let too much time go by, they can sit on a potential safety matter and we may not know about it.

The staff originally had that as a proposal. The Commission didn't think it should be in the rule. The Inspector General looked at that, and in fact agreed with the original position of the staff that there should be a time limit.

My indications from the Commission—and we have yet to execute them; we just got the information back—are that they agree, and we will set a time and then, if a vendor like GE or Westinghouse, needs additional time, what they do at the end of that time period is tell us that they need additional time. At least we'll know what the issue is. That's very important, that those initial problems that come up are made known to the agency, because sometimes they can lead to very important safety steps. It's important that we have that.

I believe the Commission has accepted the IG's position, and that's where we're headed.

Senator GRAHAM. The NRC has recommended legislation in the past which would make firms supplying components subject to civil penalties for failure to notify the NRC of known defects. Does NRC intend to continue to pursue that legislation?

Mr. TAYLOR. Yes, sir. We expect that to be coming up again this year.

Senator GRAHAM. Have you submitted what you would recommend?

Mr. TAYLOR. I believe it is being submitted. I'll have to check, sir, whether it has actually left, but it is in our proposal for this year. The Commission reviewed those and told the General Counsel to proceed, so if it isn't up here, it will be up shortly.

Senator GRAHAM. The NRC has been living through a period of considerable uncertainty. The last plant licensed is now over 12 years old——

Mr. TAYLOR. Well, we licensed Seabrook this last year, but the applicant—it has been a long time since an application was submitted, yes, sir, an application for a plant.

Senator GRAHAM. How has that uncertainty, as to the future direction and scale of the industry, affected the way in which the NRC has deployed its resources?

Mr. TAYLOR. Well, we are now in a period of examining the future. Big resource issues that dominate my thinking, particularly with regard to reactors, are the efforts to support license renewal. The first two pilot plants are in the process of making their submissions, and there will be a whole group. The industry expects somewhere on the order of 70 to 85 percent of plants to request life extension. There's a great deal of work going on on that, and that's a high priority, in my view, because it is important. If we can keep the plants operating safely and there is no technical basis to turn them off at 40 years, an additional 20 years of operation will provide a great deal to the Nation's energy supply. But we feel that's very important.

The other area where resources are now growing is the review of evolutionary reactors, the Advanced Boiling Water Reactor, the CE System 80-Plus, and the preparations to review the passive designs which are being worked by GE and Westinghouse for the 600-megawatt passive plants. That effort is a very high priority resource effort in the agency.

Those are the dominant activities in the agency with regard to reactors today, other than, obviously, the day-to- day—and our number one mission, frankly—the day-to-day safety. Every day, parts of my day are spent on current operating reactor safety, what happened last night, what happened over the weekend. I am briefed every day, and we spend time in my office; and that's true in the program offices and in the regions, of course, with the oversight of current operating reactor problems. Those remain our big priorities. The last is our most important.

Senator GRAHAM. If I could use that to bridge to a substantive issue, in some of our previous hearings we have talked about challenges to the nuclear industry and the NRC. One of those that has been consistently identified is greater standardization of design, construction, operation, and maintenance.

Could you tell us how your research efforts are directed toward greater standardization?

Mr. TAYLOR. Well, it's really being driven more out of the licensing side of our operation. We have been to the Commission with the issue of level of design detail, which is a very important issue

for the evolutionary and advanced plants. The object is to certify a plant and certify a design, so it's not like the old plants where the basic construction permit was issued and the design was completed as the plant was built. This is to avoid all those mistakes of the past.

I believe that the process that has been going on—and frankly, the industry has welcomed as reasonable the decisions by the Commission that they just made in the past month or two—I believe that our review and the necessity to get a lot of that design done before certification will force standardization. It just makes sense.

Then if you have a certified design and Utility A builds the first plant, Utility B would be foolish not to take advantage of all the design work that was done. It's going to save them a whole pot of money, money that was spent on the current generation of plants, because the architect-engineers proceeded to design the balance of the plant just as they went along. In fact, sometimes construction got ahead of design, and it was trouble.

So my view is the process—and depending on how many utilities or companies plan to buy future plants—I believe the process is in place to enhance standardization. In addition, NUPOC, which is an industry group, has efforts currently underway to provide industry support for standardization. So there are a lot of features coming together which I think will make this next generation of plants, if they are built, far more standard than current plants. The current plants are really unbelievably nonstandard in many parts of the plant.

Senator GRAHAM. It is also my opinion that that movement toward standardization is going to be a critical predicate to any changes in the permitting process, which changes are important in terms of giving greater predictability of the ultimate result. That is, if you get a license to commence, you have reasonable expectation that you'll get a license to operate.

Mr. TAYLOR. Yes, sir. As a matter of fact, the other staff effort that is currently ongoing is reviewing what they call ITAAC, which is the Inspection Test, Analysis, and Acceptance Criteria, that must be designed as part of the certification package for a plant. Now that the level of design detail has been acted on, the next big steps in working with the newer designs are, what guiding documents, principles, and standards must be set in place to ensure that the construction matches the design? And secondly, that the testing and proof of the plant are appropriately carried out before the reactors reach criticality and are allowed to operate at power. It is that careful process that must be controlled to diminish the possibility of challenges—appropriate challenges in hearings and otherwise—to the ultimate operation of the plant. Of course, that's a very important activity, and there's a lot of effort going on, even as I speak, on this ITAAC principle, as it's called, for the first plants.

Senator GRAHAM. Excuse me, is ITAAC an acronym?

Mr. TAYLOR. It's an acronym.

Senator GRAHAM. And what is it?

Mr. TAYLOR. It's the Inspection Test, Analysis, and Acceptance Criteria.

Senator GRAHAM. Gentlemen, this has been a very instructive hearing, maybe almost in the form of a seminar. I appreciate what

you're doing. As Senator Simpson said, I was very impressed in reviewing the background of each of you. You have brought a great deal of experience and knowledge and demonstrated capacity in your previous activities to this important task. Our country is better for your public service. I thank you for it and look forward to a fruitful relationship between your responsibilities and our subcommittee.

Thank you.

[Whereupon, at 11:02 a.m., the su' committee adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

PREPARED STATEMENT OF JAMES M. TAYLOR

Mr. Chairman and members of the Subcommittee, I am pleased to appear before you today to discuss the financial and programmatic management of the Nuclear Regulatory Commission (NRC). Accompanying me is Mr. Ronald M. Scroggins, the NRC's Controller.

THE NRC ENVIRONMENT

To establish a framework to discuss these areas, I will first briefly describe the NRC mission and organization. As chief operating and administrative officer of the Commission, I direct the activities of the NRC's major program offices, as well as those of the major administrative offices of the agency, subject to the policy guidance provided by the Commission. Most of the Inspector General's audit activities involve agency programs within my area of responsibility. The Inspector General and I both report to NRC's Chairman.

As you know, the NRC is responsible for ensuring that civilian uses of nuclear materials in the United States—in the operations of nuclear materials in the United States—in the operations of commercial nuclear power plants, and in medical, academic, and industrial applications—are carried out in a way that will adequately protect the public health and safety, the environment and the national security.

To accomplish its regulatory program, the Commission has approximately 3,300 employees who are assisted in selected areas by contractor technical support. Approximately 48 percent of the agency's fiscal year 1992 budget request of $512.5 million is needed to pay personnel salaries and benefits. About 32 percent is allocated to contractor support, primarily from the Department of Energy's national laboratories. The remaining 20 percent of NRC's budget request is for administrative support, including rent, telecommunications, equipment, supplies, automatic data processing, and travel. We in the NRC are cognizant of our responsibility to manage these Federal resources effectively and efficiently to achieve our mission. I will now briefly discuss how NRC manages its resources and programs.

NRC RESOURCE, FISCAL, AND PROGRAM MANAGEMENT

In the area of resource and fiscal management, we have in place agencywide accounting, financial, contractual, and administrative systems, which ensure resources are managed and controlled in accordance with applicable statutes, regulations, and good financial management practices. Periodically, these systems are reviewed to determine whether they comply with applicable laws and appropriate guidance from the General Accounting Office (GAO), the Department of the Treasury, and the Office of Management and Budget (OMB). We recognize that although NRC's financial management systems and procedures have been reasonably effective, improvements can be made. For example, over the past year I have worked closely with the Controller to strengthen the travel management area. Progress has been made, but more can and will be done. We are receptive to identification of weaknesses or possible improvements from the Office of the Inspector General, GAO, and other sources.

With regard to resource management, I hold my subordinate managers responsible for effective management and control of the resources assigned to them. Each year, as required by the Federal Managers' Financial Integrity Act (FMFIA), senior NRC managers are required to certify that their systems of internal or management control have been evaluated and provide reasonable assurance that funds, property, and other assets are safeguarded against waste, loss, unauthorized use, or misappropriation.

The NRC has a number of agency committees and groups to support its managers in implementing effective and efficient resource management and, in some instances, to provide independent reviews. For example, the NRC has an agencywide Internal Control Committee composed of senior level staff. The committee develops and maintains a five-year management control plan for the agency, in accordance with OMB guidelines, to ensure that management control reviews of selected technical and research programs and administrative activities are scheduled and conducted each year.

We also have a Senior Contract Review Board, chaired by one of my deputies. This board evaluates all projects with estimated annual obligations of $750,000 or more and triennial obligations of $2 million or more. This process ensures, among other things, that there is no unwarranted duplication of work under way or proposed by another NRC organization, that the project is important to NRC's mission, adequately described, and that appropriate alternative procurement methods have been considered.

I now turn to program management, particularly as it relates to effective and efficient use of government resources. I believe one of our most important management responsibilities is to ensure our limited resources are directed to areas that have the highest safety payoff. For example, I meet with senior NRC managers regularly to identify which nuclear facilities require special NRC attention. We are increasingly using potential "risk reduction" as a criterion for undertaking new regulatory programs or regulations. We continually assess priorities of research projects, licensing work, and other staff efforts with a focus on safety payoff.

The research program requires our largest expenditure of contract funds. To ensure our research efforts are properly directed, we require that most projects be endorsed by the program office that is expected to use the research. Furthermore, the research program is reviewed by a committee of prestigious technical experts from academia and the industry. This Nuclear Safety Research Review Committee provides valuable advice on research priorities and safety payoff.

Several NRC review and advisory committees assist in focusing staff effort. The Advisory Committee on Reactor Safeguards performs independent reviews and reports on safety studies, applications for construction permits, and facility operation licenses. It also advises the Commission with regard to hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards. A similar independent committee, the Advisory Committee on Nuclear Waste, advises the Commission on all aspects of nuclear waste management within the purview of NRC's regulatory responsibilities.

The Committee to Review Generic Requirements, which is comprised of senior managers, provides substantive quality review and comment to the staff on significant regulatory proposals to impose generic requirements on licensees. This helps to ensure there is safety payoff and obtains the best use of agency and licensee resources.

In summary, I believe the NRC has appropriate programs in place to reasonably ensure overall effective and efficient management control of its resources and programs. Nevertheless, we are striving to improve our programs in some areas and are receptive to improvements that can be made to correct any identified weaknesses.

In addition to the existing management controls, which I have just discussed, the NRC will be strengthening further its oversight of agency financial management activities as it implements the Chief Financial Officers Act of 1990. The NRC's chief financial officer (CFO) will have the responsibility and the necessary authority to enhance existing agency systems of accounting, financial management, and internal controls. The goal of such enhancements will be to strengthen the deterrence of fraud, waste, and abuse of government resources, and to help provide more complete, reliable, and timely financial management information for use by our own management, the Executive Branch, and the Congress.

NRC'S IMPLEMENTATION OF THE FEDERAL MANAGERS' FINANCIAL INTEGRITY ACT

As you requested, I will summarize the NRC's most recent report to the President and the Congress under the Federal Manager's Financial Integrity Act (FMFIA). The Chairman reported that the results of our continuing evaluation of internal control and financial management systems provide reasonable assurance that the NRC, as a whole, complies with the FMFIA. To help it reach this conclusion, the NRC performed 11 detailed internal control reviews and 2 financial management system reviews in fiscal year 1990. Emphasis was placed on technical program areas, such as the review of reactor license renewal applications, safety evaluation of licensing actions, and licensing spent fuel facilities. Research programs reviewed

included reactor containment safety and aging of reactor components. The staff also reviewed selected administrative and support areas. No material weaknesses or nonconformances were identified during these reviews. The report noted the Inspector General's findings with respect to emergency preparedness at the Pilgrim Nuclear Power Station, which I will discuss in a moment.

As part of the annual assessment of the NRC's management control program, the Inspector General concluded that the NRC's internal control systems had complied in a reasonable and prudent manner with the requirements of the FMFIA, but that the NRC needs to ensure that its financial management systems are reviewed in accordance with OMB guidelines. The Inspector General made recommendations to improve training, planning, and scheduling, and for monitoring the overall process. In response, the NRC is taking steps to enhance its review process of the financial management system in this regard. In 1991, training will be provided to reviewers of financial management systems; any more guidance needed for conducting reviews will be provided to the reviewers; and a quality control process for reviews is being established.

Additionally, the Inspector General found that effort is needed to ensure that the agency's automated license fee billing system is fully developed in a timely manner. We agree with that assessment. Substantial work is now in progress on the license fee billing system, and we expect to complete a detailed requirements analysis this summer.

RELATIONSHIP WITH THE INSPECTOR GENERAL

The staff's management control activities are complemented by the Inspector General's independent audit program. We respect and appreciate the value of the independent role the IG plays in oversight of our programs. I also believe we have an effective working relationship with the Inspector General. The IG provides a valuable service by identifying vulnerabilities and needed improvements to our programs. For example, we have a process in place for the Inspector General's independent review and comment, as he deems appropriate, on proposed legislation, regulations, and policies relating to NRC programs and operations. The Inspector General, at his discretion, briefs me on audit matters, and NRC management provides input to IG audit planning by recommending areas in which an independent IG audit may lead to improvement. During the past year, for example, the Inspector General reviewed the agency's official representation fund at the Chairman's suggestion.

The NRC takes IG findings and recommendations seriously. Generally, we have agreed with the Inspector General's recommendations. For example, during the Inspector General's last two semiannual reporting periods, 14 audit reports were issued containing 44 recommendations for corrective action. NRC management agreed to implement 40 of these recommendations and partially agreed with two others. Once IG recommendations have been considered and accepted, I take the necessary measures to ensure they are implemented. My office tracks and follows up on audit recommendations, and these recommendations are monitored through implementation. As an indication of the importance we assign to IG recommendations, only five of the four open recommendations in NRC are more than one year old.

STATUS OF SELECTED IG FINDINGS AND RECOMMENDATIONS

As requested in your invitation, I will now address some of the major findings and recommendations of audits and investigations conducted by the Office of the Inspector General during the past year.

Use of Contract License Examiners: In a review of NRC's operator licensing program, the Inspector General recommended that I petition the Comptroller General for a decision on whether NRC's contracts for operator licensing examiners comply with Federal contract regulations. On February 11, 1991, the NRC requested a decision on this issue from the Comptroller General, and we are awaiting the Comptroller General's response.

NRC Management of Reporting Requirements Under 10 CFR Part 21: One of the recommendations in the Inspector General's report on NRC management of reporting requirements under 10 CFR Part 21, was that I submit to the Commission a revision to 10 CFR Part 21 that includes in the text of the rule a specific timeframe for the evaluation of deviations to identify defects which could create substantial safety hazards. On January 10, 1991, I provided a recommendation to the Commission for a decision on this issue. In response, the Commission reconsidered its earlier decision not to incorporate in the revision to Part 21 a specific timeframe for the

performance of an evaluation. The Commission agreed to consider a revised final rule that includes a requirement that organizations which identify potential defects in their products either complete Part 21 evaluations within a specified period of time or, if the licensees are unable to complete the evaluation within the specified time period, submit a report to the NRC that they are in the process of evaluating the subject defect.

Followup Actions Taken on OIA Report, "Review of the Controls Over the Use of Travel Funds": In a followup review of a previous audit report on the use of travel funds, the Inspector General concluded that 5 of 14 recommendations to improve controls had not been fully implemented. These recommendations related to the adequacy and accuracy of travel reports and followup on outstanding travel advances. The Inspector General added three new recommendations as a result of his 1990 review to improve the accuracy of travel data and the timely settlement of open authorizations. In addition to implementing these recommendations, the Controller has taken actions to improve the overall agency travel system. Through a special and concentrated effort, the backlog of open travel authorizations from previous years has been essentially eliminated. To prevent the type of problems identified by the Inspector General from recurring, the Controller performed a detailed management review of agency travel services, operations, and management. The recommendations from this study are being implemented.

Emergency Preparedness at the Pilgrim Nuclear Power Station: The Inspector General reported deficiencies by NRC staff in assessing and reporting on the Pilgrim Nuclear Power Station offsite emergency preparedness program. In response to this report, I formed a "Lessons-Learned Task Force" to develop recommendations on how the NRC should proceed if a situation similar to the situation at Pilgrim is encountered in the future. On October 1, 1990, the task force issued its report. Recommendations were developed, which the Commission approved. Another task force, the "Task Force on Pilgrim Offsite Emergency Preparedness," in which the Federal Emergency Management Agency (FEMA) is participating, was formed to independently determine the facts concerning Pilgrim offsite emergency planning issues in dispute. Then, based on its assessment of the facts, the task force is to recommend to management whether the NRC should reconsider its finding that the state of emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the Pilgrim Nuclear Power Station. This task force is expected to complete its review this spring.

Review of NRC's Emergency Planning Regulations and Implementing Guidance: As a result of the Inspector General's review of NRC's emergency planning regulations and implementing guidance, the Commission referred two recommendations to the General Counsel for his views. The first IG recommendation was to restate the objective of emergency planning as stated in NUREG-0654/FEMA-REP-1, Rev. 1, particularly relating to dose savings, to be consistent with the objective of 10 CFR 50.47 and the 16 planning standards contained therein. In a memorandum to the Commission dated February 22. 1991, the General Counsel concluded that from a legal standpoint there is no need to modify NRC emergency planning regulations and guidance relating to the issue of radiological "dose savings." The second issue was referred to the General Counsel in accordance with the Inspector General's recommendation to determine whether the NRC has the authority to conduct its own reviews of offsite emergency preparedness. The General Counsel advised the Commission in a memorandum dated February 22, 1991, that the NRC does, in fact have this authority. The Inspector General has closed this recommendation based on the NRC's legal opinion.

10 CFR 35: As a result of an investigation of staff assistance provided to petitioners, the Inspector General recommended that (1) additional staff guidance be developed regarding the extent to which staff may assist prospective petitioners in developing rulemaking petitions and (2) such staff assistance be disclosed to the Commission and the public in any rulemakings that may stem from the petitions. The Commission concurred with the Inspector General's recommendations and on December 11, 1990, directed that the recommendations be implemented. On February 26, 1991, I signed the final rule implementing these recommendations and an announcement is being sent to all employees.

This concludes my statement. Mr. Chairman, we are prepared to answer any questions that you and the subcommittee may have.

PREPARED STATEMENT OF DAVID C. WILLIAMS

Mr. Chairman and members of the Subcommittee, I am pleased to appear before you today to discuss the recent work and the general level of effectiveness of my office at the U.S. Nuclear Regulatory Commission (NRC). Specifically, you expressed an interest in the office's investigative work and the major findings and recommendations of recent audits including our examination of the agency's Federal Manager's Financial Integrity Act.

As you know, the Inspector General Act Amendments of 1988 created a statutory Inspector General at the NRC, effective April 15, 1989. Following my Senate confirmation, I assumed the duties of the Inspector General in December 1989. The Office of the Inspector General (OIG) replaced the NRC Office of Inspector and Auditor (OIA) that was responsible for conducting the agency's internal audit and investigative programs.

Our investigative staff has been engaged in a very high level of activity during a period of broad transition. During this very busy year a major restructuring of the investigations section occurred. A number of investigators with extensive criminal investigative experience were recruited from a variety of backgrounds. A principal task for this new group was to reduce a tremendous backlog of very old investigations that this new office had inherited. The backlog was a serious concern to the Commission as well as your full Committee, which asked that those investigations be completed as quickly as possible. I am particularly pleased to report to you that this was accomplished. There were 109 investigations closed between December 1989, and the present. Our current inventory of cases focuses on a number of recent, significant matters. Among the investigations were two extensive examinations of the manner in which the Office of the Inspector and Auditor had conducted investigations. Much was learned from these introspective examinations concerning the conduct of high-level internal investigations. Principles that will serve as guides for future work were developed and adopted to assure fairness, objectivity, and the rule of law within the Commission.

We also conducted other important investigative work such as our examination of undisclosed and inappropriate levels of assistance given to petitioners who wish to propose rulemaking changes within the NRC. The agency was quick to examine and create important changes to its policy for staff who provide assistance to rulemaking petitioners.

In addition, we developed a new investigative manual which complies with the standards of the President's Council on Integrity and Efficiency and current guidelines of the Department of Justice. The manual also reflects the many lessons learned from the past and from our first year in operation.

During the past year our investigative work has been principally-reactive. Although investigations by nature are often reactive to events, the coming year will require additional planning. Not only should the office focus on suspected areas of misconduct, but there are broad planning requirements under the Program Fraud Civil Remedies Act. The NRC Office of the General Counsel is currently preparing regulations which will define our responsibilities under this Act. Since the NRC has a second investigative organization that examines false statements made to the NRC, extensive coordination and joint investigative efforts are expected from this legislative mandate for my office.

This year has brought a significant increase in the number of allegations submitted to my office. We view this as a positive indication of the growing confidence NRC employees and the public have toward the Office of the Inspector General. We established a Hotline to receive allegations of fraud, waste, and abuse at the NRC. Since that time, the number of allegations received each month has steadily increased to where we now receive over three times the number of allegations reported by our predecessor office. While our Hotline is accountable for a major portion of the allegations reported to the OIG, a considerable number of them are being directly mailed or otherwise provided to the OIG. Approximately one-half of our current investigative caseload was generated by employee complaints.

Other outgrowths of our investigative program concern the manner in which the OIG protects the confidentiality of informants and refers investigative issues to the Department of Justice. Prior to my arrival, there were historic problems in these two areas. I am pleased to say that essential procedures have been established and appear to be working effectively.

Restructuring of the investigative section included the formation of an inspection team. Inspections are expedient, fact-finding inquiries that examine singular incidents of a problematic or troubling nature and with consequences too urgent to await a broader review. Our first inspection focused on NRC's evaluation of emer-

gency preparedness planning around the Pilgrim Nuclear Power Station. The inspection found that the evaluation was not balanced or thorough and that certain information provided by the staff to the Commission was inaccurate.

The Executive Director for Operations (EDO) quickly formed a Lessons Learned Task Force to respond to the findings and to reevaluate the emergency planning adequacy near the Pilgrim Nuclear Power Station. A congressional hearing was also held to examine the issues raised by this inspection. Since that time a number of other inspections of highly significant events have been initiated and are underway.

During the past year, our audit program focused on two general areas, technical audits and administrative and financial audits. Among the technical audits we reviewed was the NRC's program for licensing reactor operators. Historically, the NRC has relied on private contractors to augment their staff of operator licensing examiners. We reported that the use of contract examiners to perform a Government function may violate Federal contract regulations. Following our review, we recommended that the EDO petition the Comptroller General for a decision on this matter. The NRC is currently awaiting a response from the General Accounting Office.

Our audits also addressed safety issues that affect industrywide operations. In commenting on the need for accurate and reliable reporting systems to deal with the problems of defective parts, we suggested modifications to ensure timely and accurate reporting by vendors and licensees to preclude the possible use of substandard parts and components in nuclear plants. The use of such defective parts or components could lead to serious safety hazards.

Another industry-wide issue that we examined was the need to clarify how the NRC evaluates emergency preparedness at nuclear power plants. We recommended a series of actions to define key elements involved in evaluating emergency preparedness planning. We also suggested clarification of the respective roles of the Federal Emergency Management Agency and the NRC in performing these evaluations.

Concerning administrative and financial audits, we focused on the NRC's need for accurate and timely financial accounting systems. The need for such systems is apparent since the Nuclear Regulatory Commission is now one of the few Federal agencies required to recover 100 percent of its budget authority through license and user fees charged to its applicants and licensees. Our audit section has focused on key aspects of existing systems including the agency's debt collection and prompt payment capability, its travel system, and its license fee and cash management capabilities. Our future attention will be directed to the agency's financial statements, budget execution, and its overall financial management system.

An example of the need for improved financial controls was determined during our review of the NRC's follow-up procedures regarding the management and accounting of travel funds. We found that the agency had implemented nine of our fourteen recommendations listed in a January 1988 report. However, inadequate action or no action had been taken on five remaining recommendations concerning the adequacy and accuracy of travel reports and the lack of effective follow-up procedures regarding outstanding travel balances. Following our most recent review of the issue, the Controller formed a task force to review financial operations which included problems we had identified. Through our report and the efforts of the task force, organizational changes were made which assured the timely submission of travel claims and more aggressive follow-up procedures.

Our Semi-Annual Report dated October 1990, cited over $250,000 as funds which the NRC could put to better use. These savings resulted from pre-award audits, which are reviews of contractors' cost proposals. By using these audit findings, the NRC was able to negotiate reduced contract costs.

OMB Circular A-123 implements the Federal Managers' Financial Integrity Act (FMFIA) which provides that the Inspector General "may advise the agency head whether the agency's review and evaluation process has been conducted consistent with this circular." In complying with this direction, among other things we have maintained contact throughout the year with the NRC's Internal Control Committee which develops policies, guidance, and procedures for effective NRC internal controls.

In our recent review of the NRC's 1990 FMFIA assurance letter to Congress, we noted NRC's compliance with portions of the Act but advised that Federal agencies are required to conduct periodic detailed reviews of internal financial systems. Regarding those reviews performed by the NRC, we commented on the agency's need to conduct future reviews in conformance with OMB guidelines. We will continue to work with the NRC throughout the remainder of the year on this issue.

Although the assurance letter identified several problem areas, none of them were of a magnitude as to be considered a "material weakness." The problems concerned the travel accounting system, which we have already discussed, and the manner in which the NRC conducted an emergency planning review at the Pilgrim Nuclear Power Station.

From this body of audit, investigative, and inspection work grew a need for systematic resolution and follow-up activity by the agency. I believe the NRC has worked closely with us in discussing our recommendations and the manner in which they may be implemented. After an agreement is reached the recommendation is tracked by a senior management official until it is implemented. If the agency and my office disagree on a recommendation, the matter is escalated for final resolution to the EDO, and the NRC Chairman may be consulted if the recommendation involves a significant issue. Evaluating the impact of implemented recommendations becomes the task of audit follow-up work. I intend to work with the EDO this year to increase our joint emphasis on the importance of audit follow-up.

This year my office made 44 recommendations for change in such important areas as defective part reporting, emergency planning, financial management, contracting practices and the manner in which the NRC relates to external parties. The agency agreed to implement 40 of the 44 recommendations. We believe that the remaining four concerns may be resolved by alternative changes that the agency has proposed for itself. These four issues will be examined in our audit follow-up work.

Our investigations and inspections also resulted in significant changes. These changes range from specific personnel actions to broad policy modifications.

I believe the record of agency response to this year of change has been good. The EDO and the Controller have personally involved themselves in bringing about this change. I commend them for their highly focused and rapid responses to our work.

During the conduct of our work there has also been complete cooperation by the Commission and agency officials in assuring complete and immediate access to their records and personnel. Finally, the Commission was quick to address critical shortfalls in resources experienced by my office in the early months of operation.

In the coming year the Commission has supported the need for the creation of a small financial management audit group within my office. This was necessitated by recent legislative requirements and by our own identification of new audit responsibilities. The Chief Financial Officer's Act requires us to support the NRC's implementation of this important financial management reform initiative. The proposed audit group will examine the effectiveness of the NRC's financial management components and will audit the CFO's financial statement.

Furthermore, this new financial management audit group will examine the Commission's contracting activities and the performance of the agency's numerous contractors. When the OIG was initially formed, we had no contract audit capability. Our creation of a contract audit group has been supported by the Chairman, and we propose to implement this activity in the immediate future. Finally, the group will also conduct other annual financial management audits required by law and by Office of Management and Budget directives.

As I have mentioned, much of the past year was consumed with start-up issues and with gaining control over a chronic investigative backlog as well as problems concerning the timeliness and relevance of audit efforts. I am confident that the office is now in a position to assume an aggressive, highly relevant routine. With respect to investigations, that would mean the timely management of the investigative caseload. I have pointed out the dramatic increase in allegations and referrals received. The program must be responsive to that growing challenge. By definition, the inspection program must be highly responsive as well, reacting quickly to events and incidents of urgent concern to the Commission and to Congress.

In the audit arena, the program must maintain a vastly improved audit cycle, which is the period required to audit each of the agency's components. Our audit program must deal with the important current issues and new initiatives facing the Commission. I believe these priority issues include the manner in which the agency receives and acts upon information from external sources, as well as the propriety of its relations with interest and industry groups. We must also provide assurance of the integrity and proficiency of the agency's inspection and safeguards programs.

At the moment, the agency is involved in critically important initiatives affecting the future of the agency and the nuclear industry. The IG must provide assurance in the areas of agency research, nuclear waste management, license processing, and the standardization of plant design. For aging nuclear plants, plant decommissioning and license renewal are matters of great importance.

This concludes my report to you on the activities of the past year and the current status of our operation. The challenge of providing assurance to the NRC in these

important, complex programs is great, and we look forward to assisting the agency in meeting this challenge. Thank you for the opportunity to explain our program today. We look forward to working with the Subcommittee in the future.

STATEMENT OF THE AMERICAN COLLEGE OF NUCLEAR PHYSICIANS AND THE SOCIETY OF NUCLEAR MEDICINE

The American College of Nuclear Physicians (ACNP) and the Society of Nuclear Medicine (SNM) wish to comment on program and financial management at the Nuclear Regulatory Commission (NRC). The ACNP and SNM represent approximately 14,000 physicians, scientists, pharmacists, chemists and technologists engaged in the clinical and research applications of nuclear medicine.

THE ROLE OF NUCLEAR MEDICINE

Nuclear medicine is that specialty of medicine that utilizes small quantities of radioactive drugs for diagnostic purposes and larger amounts for therapy. Imaging procedures that assess function and metabolism and are used for diagnosing diseases of the heart, brain, Kidneys, bones, lungs, endocrine organs and gastrointestinal tract are common. We perform about 10,000,000 diagnostic imaging studies, 50,000 therapy studies (mainly for hyperthyroidism and thyroid cancer), and 100,000,000 radioimmunoassay tests (such as with blood or urine) per year on 30,000,000 hospitalized patients and outpatients.

THE NRC AND MEDICINE

Section 104 of the Atomic Energy Act establishes the mandate of the NRC in medicine:

> The Commission is authorized to issue licenses to persons applying for use in medical therapy. In issuing such licenses the Commission is directed to permit the widest amount of effective medical therapy possible with the amount of special nuclear material available for such purposes and to impose the minimum amount of regulation consistent with its obligations under this Act to promote the common defense and security and to protect the health and safety of the public.

The Atomic Energy Commission (AEC) performed well under this mandate until 1975, when the NRC was established as an independent regulatory agency. All licensing and related regulatory functions previously assigned to the AEC were transferred to the NRC. Since 1985, NRC has embarked on a very extensive, expensive, and comprehensive program to regulate the actual practices of nuclear medicine and nuclear pharmacy.

Other Federal, national, professional, and State agencies are already mandated to oversee the practices of nuclear medicine and nuclear pharmacy; these agencies include the Food and Drug Administration (FDA), the United States Pharmacopeial Convention (USP), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), all 50 State Boards of Medicine and of Pharmacy, the Society of Nuclear Medicine (SNM), the American College of Nuclear Physicians (ACNP), the American Pharmaceutical Association (APhA), the American Board of Nuclear Pharmacy, the National Association of Boards of Pharmacy (NABP) and the Health Care Financing Administration (HCFA).

The NRC program is supposed to address the potential effects of byproduct material or radiations therefrom on the health and safety of workers and members of the public. Regulatory authority for patient radiation safety was formally given by law to the Department of Health and Human Services (DHHS) in 1981 (42USC 10001-10008), and clinical decision-making and practice falls to the groups mentioned above. The NRC Program must exclude regulation of clinical and professional decision-making by nuclear physicians and nuclear pharmacists.

PROFESSIONAL PARTICIPATION

The NRC has maintained an Advisory Committee on Medical Uses of Isotopes (ACMUI), which is critically important, particularly since not a single member of NRC staff has medical practice qualifications. Unfortunately, the NRC has consistently ignored the recommendations of this Committee. A Petition filed in June, 1989 imploring NRC to retract faulty regulations and license conditions was endorsed by 310,000 health care professionals, but NRC has refrained from taking meaningful action on this Petition for 21 months. The Commission has so far refused to even

grant a hearing on the Petition. NRC's Proposed Rule for Medical Quality Assurance has been fought not only by 11 of the most important professional organizations but by the 29 Agreement States as well. NRC has refused to even address the severe criticisms of the medical and pharmacy professionals and the State Regulatory agencies.

BELOW REGULATORY CONCERN (BRC)

NRC's handling of the BRC Policy issue has angered many States, the Congress, and certain members of the public. The nuclear medicine community believes that the concept of BRC is logically compelling and that this is an area in which a national standard is essential to the continued availability of nuclear medicine services. We have been working with NRC and professional organizations to optimize the safety and regulatory aspects of BRC so that the entire country will benefit from a measurably improved policy. The NRC Program should include definitive leadership in radiation biology to accomplish this, either by appointing a commissioner with a background in radiation biology and health risks or by obtaining such expertise outside the Agency.

EQUAL TREATMENT

Whereas the medical uses of isotopes have been subjected to the same criteria as the nuclear power industry, the medical industry is denied the same protection enjoyed by the large reactors. Inequality of regulatory treatment of licensees continues to be a management problem at the Commission.

For example, the radiopharmaceutical industry has for many years attempted to attain the same insurance status gained by the nuclear power industry under the 35 year old provisions of the Atomic Energy Act of 1954, as amended. Third-party liability for nuclear power plant accidents is guaranteed under the Act's provisions known as the Price-Anderson Act.

The Society and College favor inclusion of radiopharmaceutical production facilities in a provision similar to Price-Anderson for the same reasons that nuclear power utilities were originally included. These reasons include the unavailability of insurance in the commercial market to cover liability for off-site damage to persons or property caused by an occurrence emanating from a radiopharmaceutical facility and the desirability of maintaining the availability of nuclear medicine to the public for diagnostic and therapeutic medical uses. Such a beneficial rule should not be limited to the power utilities.

DUAL REGULATION

NRC's intrusions into the regulation of medicine and pharmacy have resulted in the imposition of dual regulation (FDA and NRC) on some aspects of nuclear medicine practice. The Commission has also proposed to duplicate the effective Joint Commission on Accreditation of Healthcare Organizations (JCAHO) quality assurance programs. We believe NRC must retract itself from these intrusive functions.

Likewise, we believe that the EPA must curtail its attempts to dual regulate functions that NRC carries out very well. Although it is appropriate for EPA to set risk targets, the translation of those risk quantities into permissible concentration limits, and the promulgation of regulations to assure the adequate enforcement of those limits, should be the unique domain of NRC. The EPA's 40 CFR 61, the Radionuclide NESHAP's, is an inappropriate dual regulation of what is clearly NRC's authority. NRC's new 10 CFR Part 20 is quite adequate. EPA should use the petition process to make scientifically demonstrated modifications to NRC regulations if EPA risk assessments prove to be superior.

CONCLUSION

The NRC's budget should be scrutinized to ensure the most effective use of its program dollars. It is unacceptable for the Commission to devote time and funds to new programs which duplicate effective, existing ones, unanimously opposed by experts, while ignoring the optimization of BRC and EPA dual regulation issues. Most importantly, NRC is doing little to launch a national education program to restore nuclear power to its appropriate role. Without a clear productive agenda, it is questionable why we need 3,100 employees and half a billion dollars a year to do little more, in effect, than preside over the decommissioning of some 110 nuclear power reactors.

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